

# WATER SHORTAGE CONDITIONS REPORT

January 2001



Environmental Monitoring and Assessment Division  
SFWMD

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# INTRODUCTION

## Background

This monthly water shortage conditions report was prepared in response to the water shortage conditions in the South Florida Water Management District area. **ALL DATA ARE PROVISIONAL AND SUBJECT TO CHANGE.** The information provides a monthly snap shot of hydrologic conditions in various parts of the District. Rainfall, flows, water levels and storage information are provided graphically and in tabular format. Figure 1 shows the areas that were under water use restrictions as of January 17, 2001.

**Map of Water Restriction Areas**

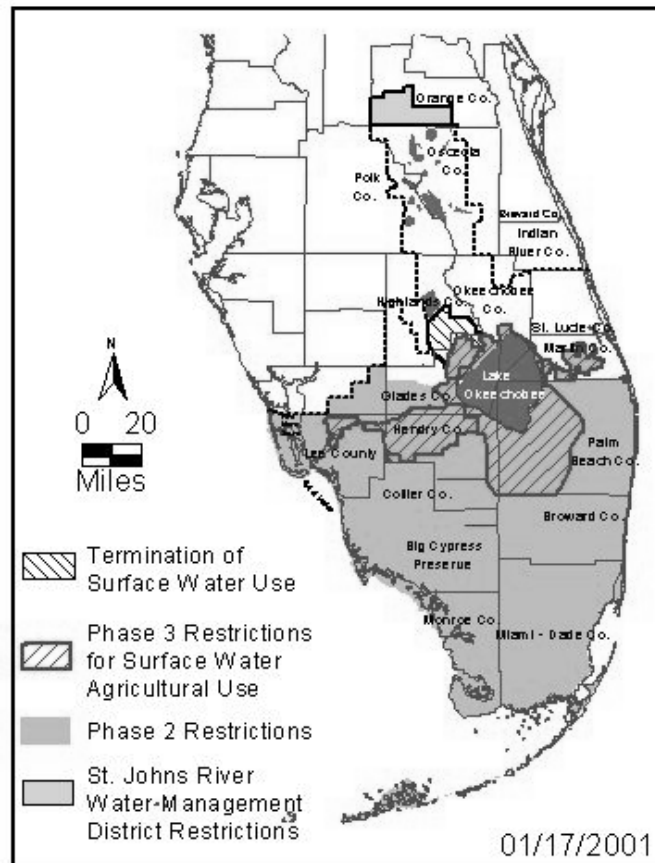


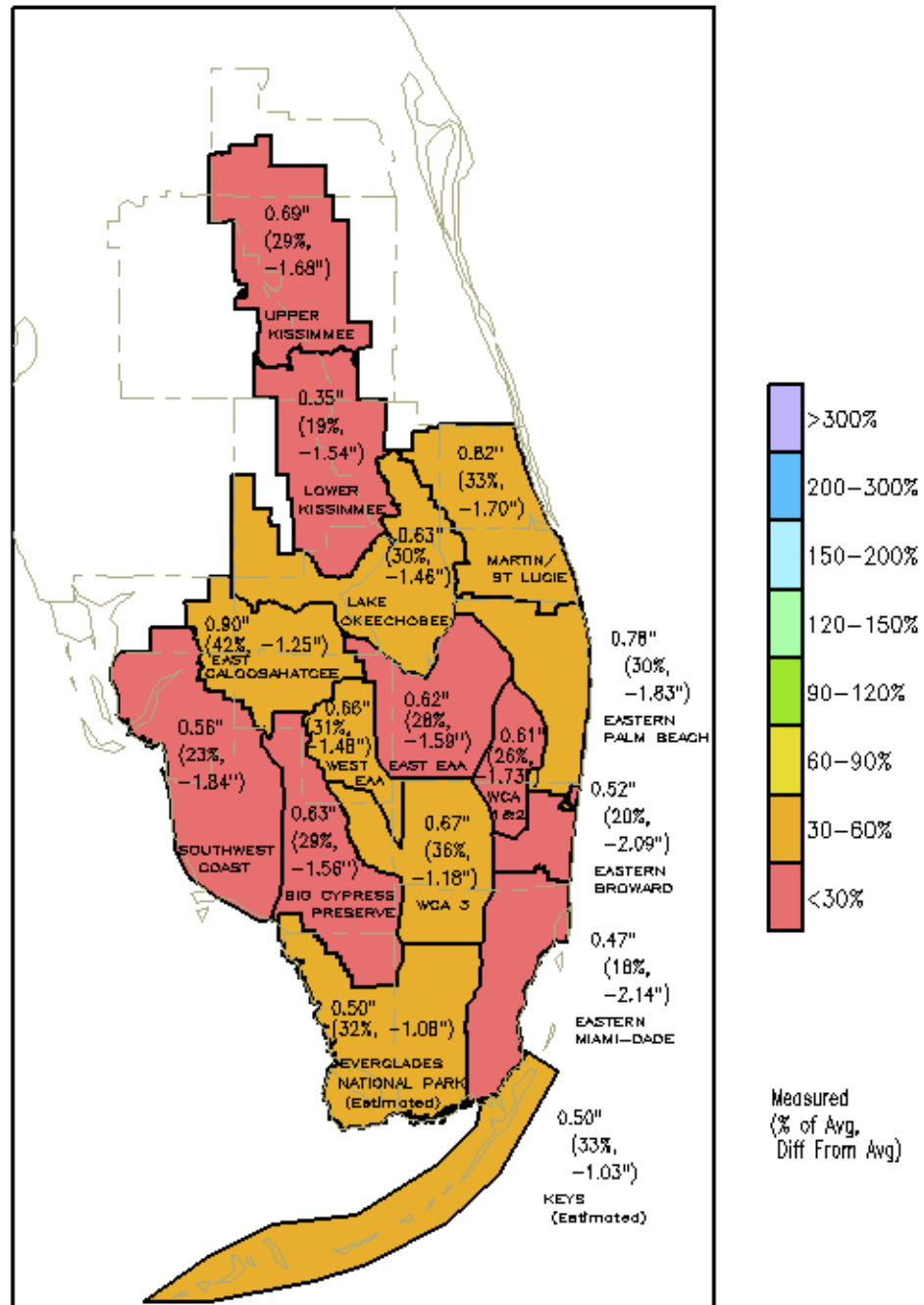
Figure 1.

## MONTHLY RAINFALL

January 2001 was a drier month than average throughout the District. Based on provisional data, average monthly rainfall for each rain area, change from historical average and percent change from historical average are depicted in Figure 2. The average rainfall deficit for the District was 72 percent below the historical monthly average. Percent departure from historical average rainfall for January is depicted in Figure 3 for all rain areas.



# SFWMD Rainfall 02-Jan-2001 to 01-Feb-2001



DISTRICT-WIDE: 0.63" (28%, -1.63")

GrADS: COLA/IGES

Figure 2.

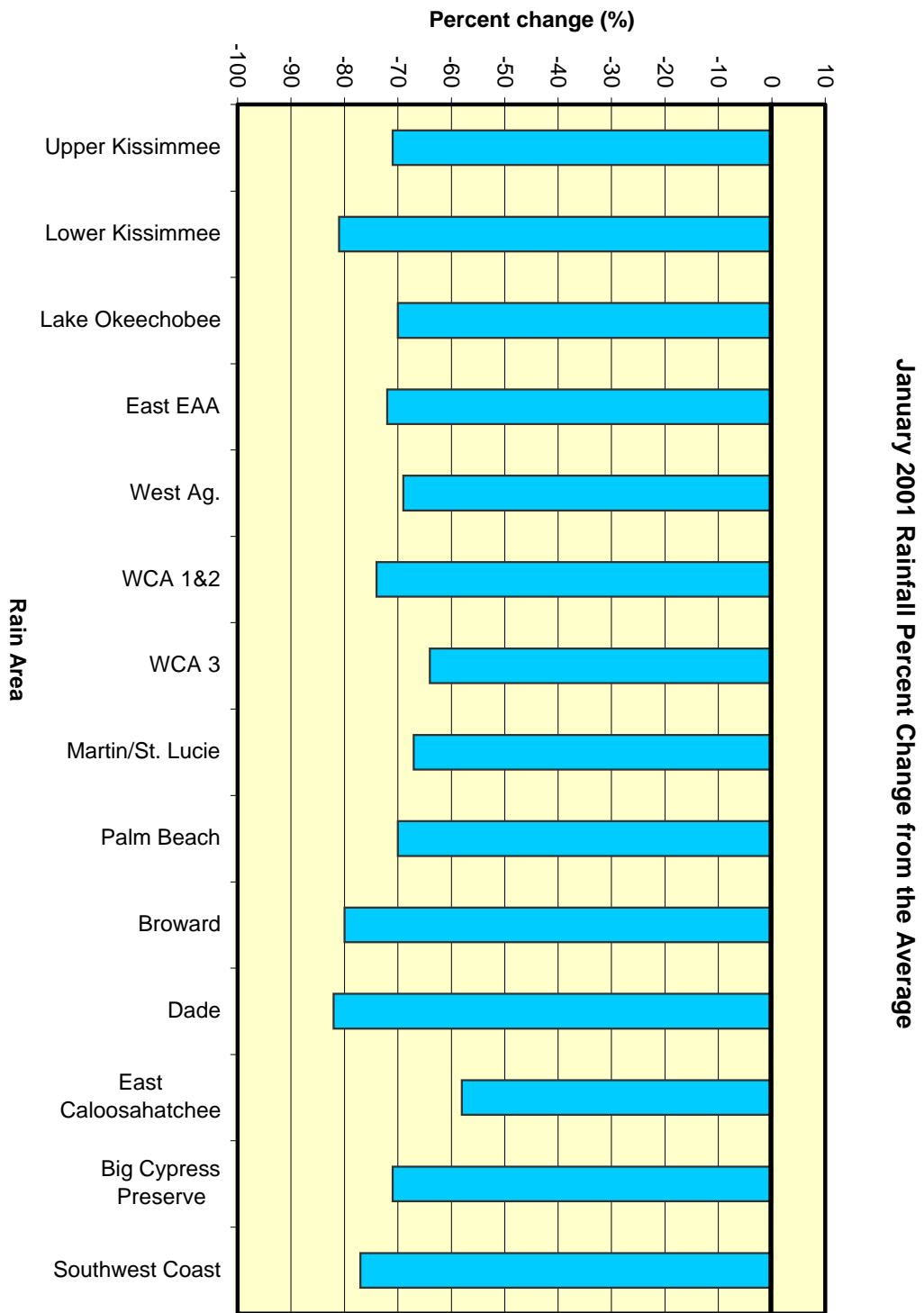


Figure 3.

## **FLOWS, WATER LEVELS AND STORAGE**

Flow through structures, water levels and storage in lakes and Water Conservation Areas are presented in graphic and tabular formats. Due to limitations in availability of data and time constraints, a limited number of areas are included in this report.

### **Lake Kissimmee**

There was no outflow from Lake Kissimmee through structure S65 in January 2001. Figure 4 shows the location of S65 as well as other structures associated with Lake Istokpoga and Indian Prairie. The water level (stage) of the Lake changed from 49.16 ft NGVD at the beginning of the month to 48.86 ft NGVD the end of the month. Figure 5 shows daily water levels for Lake Kissimmee.

### **Lake Istokpoga**

There was no discharge from Lake Istokpoga through structure S68 during January. Water level declined from 37.72 ft NGVD to 37.58 ft NGVD through January 2001. Daily flow and water levels are shown in Figure 6.

### **Indian Prairie**

There was no outflow from C-40 and C-41 canals through structures S72 and S71. G207 pump station pumped 521 acre-ft of water from Lake Okeechobee into the C-41 canal and G208 pumped 601 acre-ft into the C-40 canal (the locations of G207 and G208 are shown in Figure 4). Water level in C-40 canal at S75 headwater increased from 25.30 ft NGVD to 25.86 ft NGVD. The minimum operational/regulatory level is 22.5 ft NGVD. At the S72 headwater in the C-40 canal, water level increased from 17.20 to 18.67 ft NGVD. The minimum operational/regulatory level is 17.7 ft NGVD. The water level in the C-41 canal at the S70 headwater increase from 25.26 ft NGVD to 25.80 ft NGVD. The minimum operational/regulatory level is 22.5 ft NGVD. At the S71 headwater in the C-41 canal, the water level rose from 17.86 to 18.38 ft NGVD. The minimum operational/regulatory level is 17.0 ft NGVD. The water level in the C-41A canal at the S83 headwater fell from 29.72 ft NGVD to 28.60 ft NGVD. The minimum operational/regulatory water is 29.0 ft NGVD. Figures 7, 8, and 9 depict these water levels in the Indian Prairie area. Table 1 summarizes monthly flows through structures on the C-40, C-41 and C-41A canals.

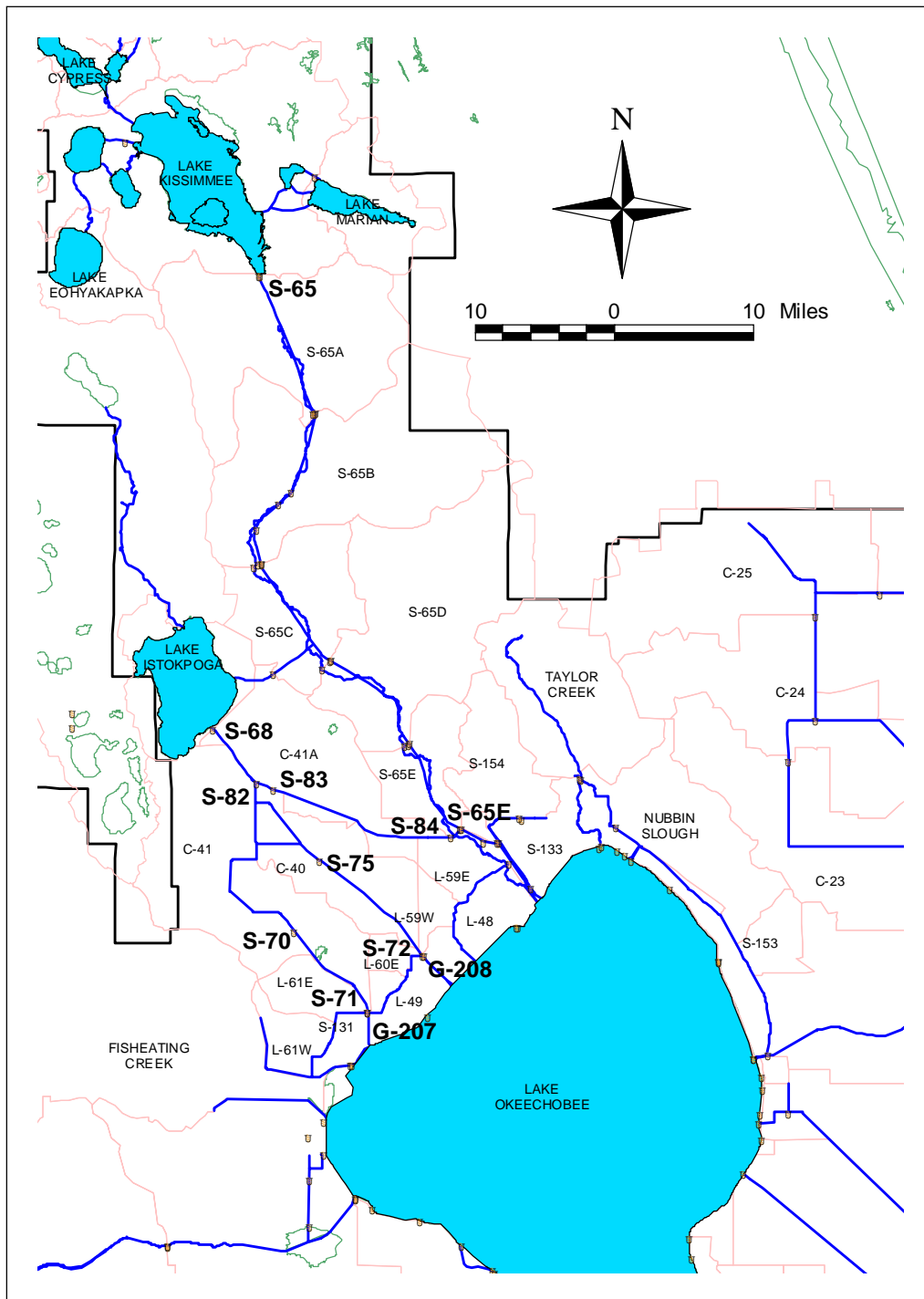


Figure 4. Lake Kissimmee, Lake Istokpoga and Indian Prairie Water Level and Flow Monitoring Locations

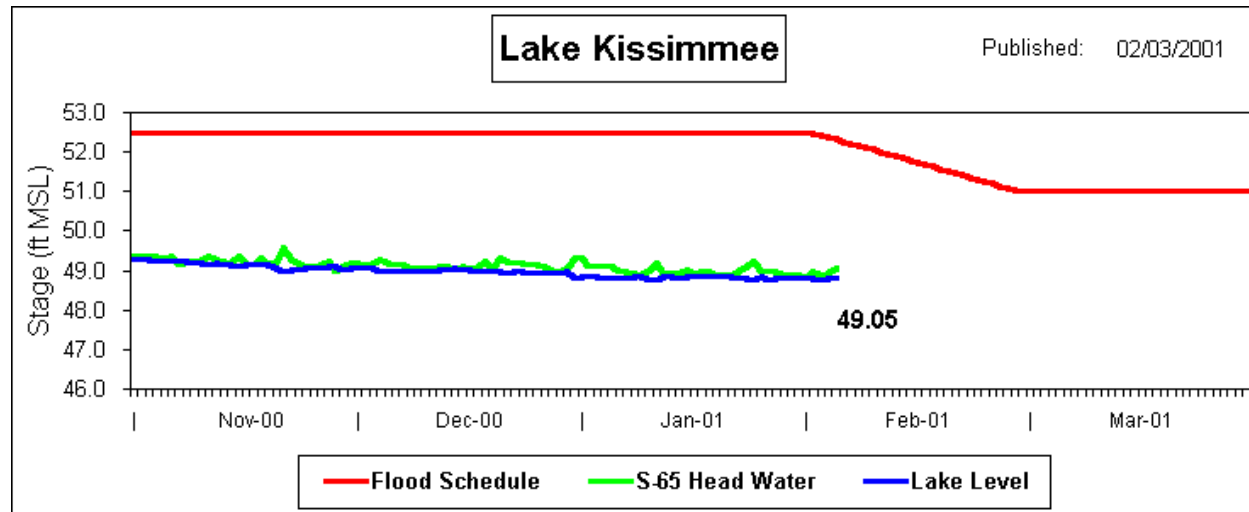


Figure 5.

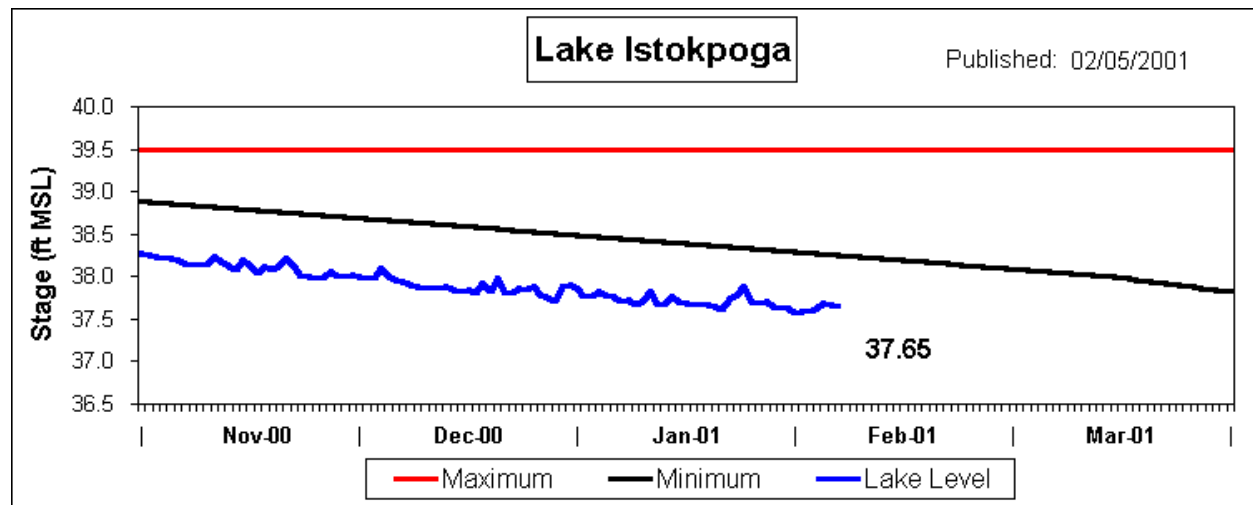


Figure 6.



### C-40 Canal Average Daily Water Surface Elevation

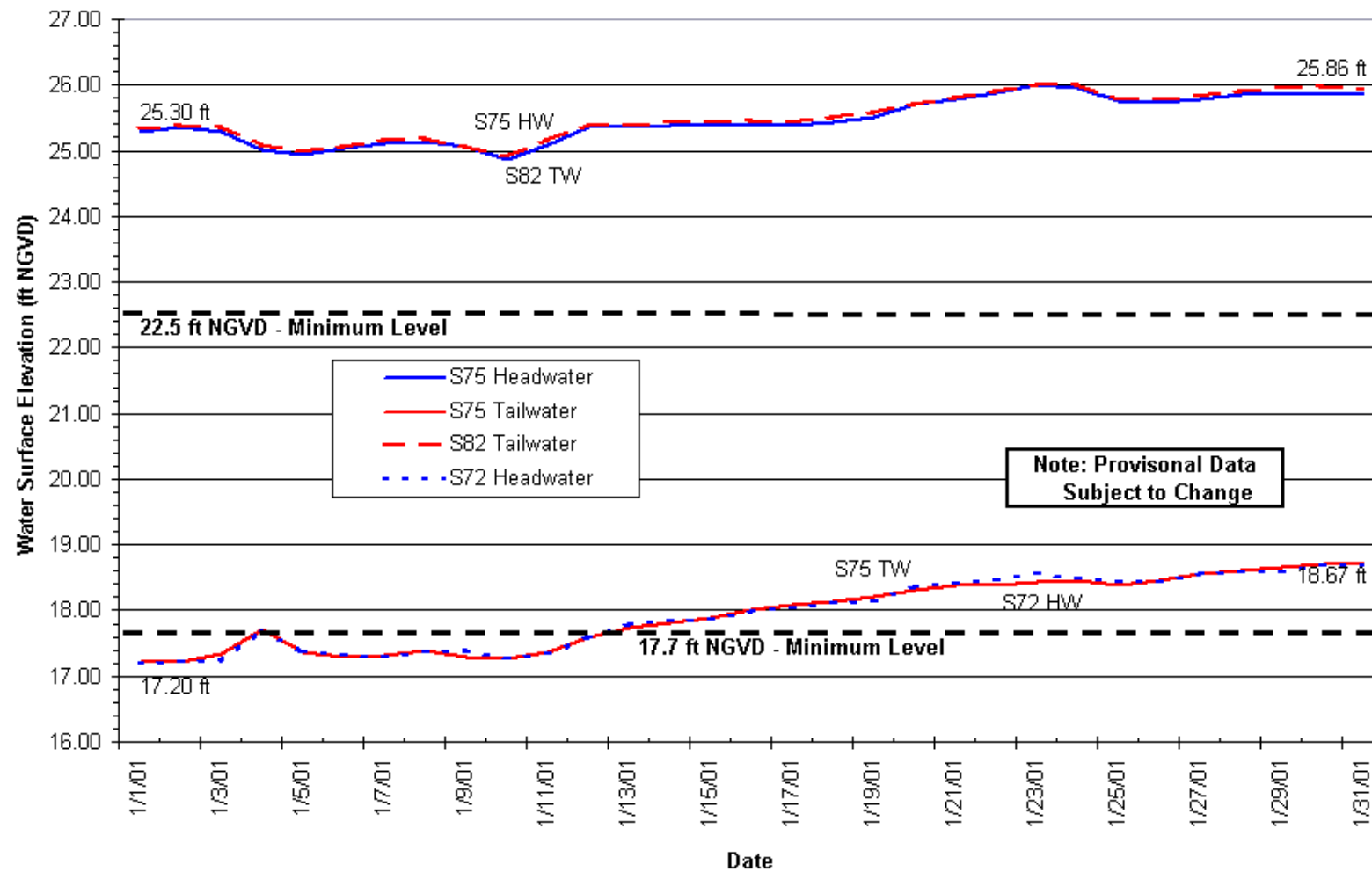


Figure 7.

### C-41 Canal Average Daily Water Surface Elevation

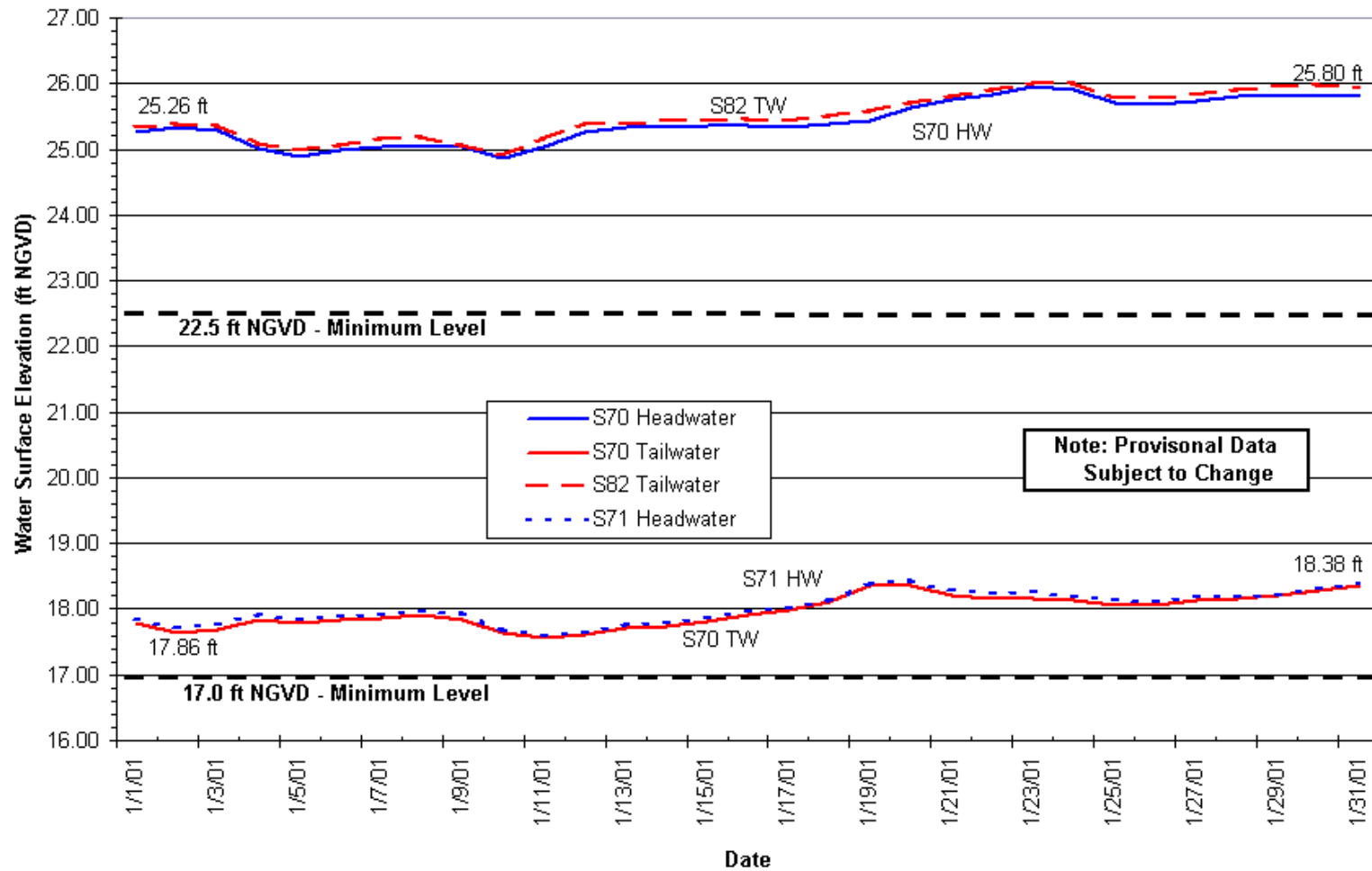


Figure 8.

### C-41A Canal Average Daily Water Surface Elevation

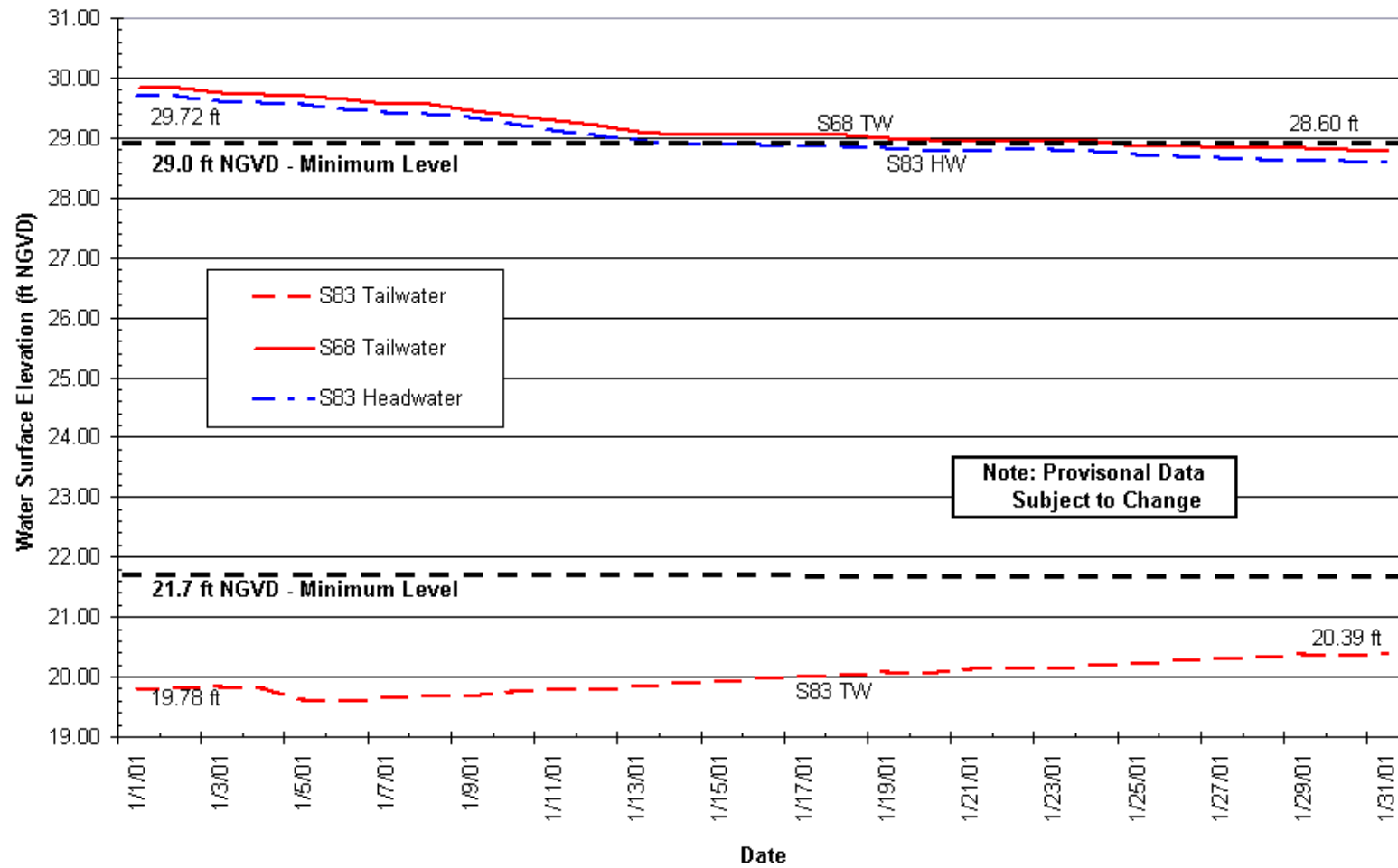


Figure 9.

**Table 1.**

<b>Indian Prairie Flows - January 2001</b>	
<b>Station</b>	<b>Flow Volume (ac-ft)</b>
<b>G207</b>	<b>521</b>
<b>G208</b>	<b>601</b>
<b>S68</b>	<b>0</b>
<b>S70</b>	<b>0</b>
<b>S71</b>	<b>0</b>
<b>S72</b>	<b>0</b>
<b>S75</b>	<b>134</b>
<b>S82</b>	<b>0</b>
<b>S83</b>	<b>0</b>
<b>S84</b>	<b>0</b>

### **Upper East Coast**

The water level in the C-23 canal at the S97 headwater increased from 14.64 at the beginning of the month to 16.37 ft NGVD at the end of the month. The minimum operation/regulatory level is 14.0 ft NGVD. The tailwater at S97 remained approximately the same at 7.90 ft NGVD throughout the month. The minimum operational/regulatory water level is 4.0 ft NGVD. The water level in the C-24 canal at the S49 headwater rose from 15.55 ft NGVD at the beginning of the month to 16.78 ft NGVD at the end of the month. The minimum operation/regulatory level is 14.0 ft NGVD. The water level in the C-25 canal at the S99 headwater was 14.88 at the beginning of the month and 14.87 ft NGVD at the end of the month. There were fluctuations, however during the month. The minimum operation/regulatory level is 14.0 ft NGVD. The tailwater at S99 remained approximately the same at 12.03 ft NGVD throughout the month. The minimum operational/regulatory water level is 8.0 ft NGVD. Figure 10 shows the location of structures S97, S49 and S99. Figures 11, 12 and 13 depict water levels in the C-23, C-24 and C-25 canals.

### **Lake Okeechobee**

The average water level of Lake Okeechobee declined from 11.12 to 10.85 ft NGVD in January 2001. Total storage was estimated at 2,316,950 acre-ft while gravitationally available storage was 432,950 acre-ft. The estimated evaporation for the lake was 3.6 inches for the month. Figure 14 shows water level and storage for Lake Okeechobee for the month and Figure 15 depicts daily evaporation. Due to the drought conditions, inflows to the lake totaled 9,314 acre-ft in January down from an average of 124,500 acre-ft. Total outflow from the lake was 31,140 acre-ft. Figure 16 shows the service allocation areas and structure locations for Lake Okeechobee. Table 2 shows inflows and outflows by structure and by service allocation area. Daily Lake Okeechobee inflows and outflows are shown in Figure 17.

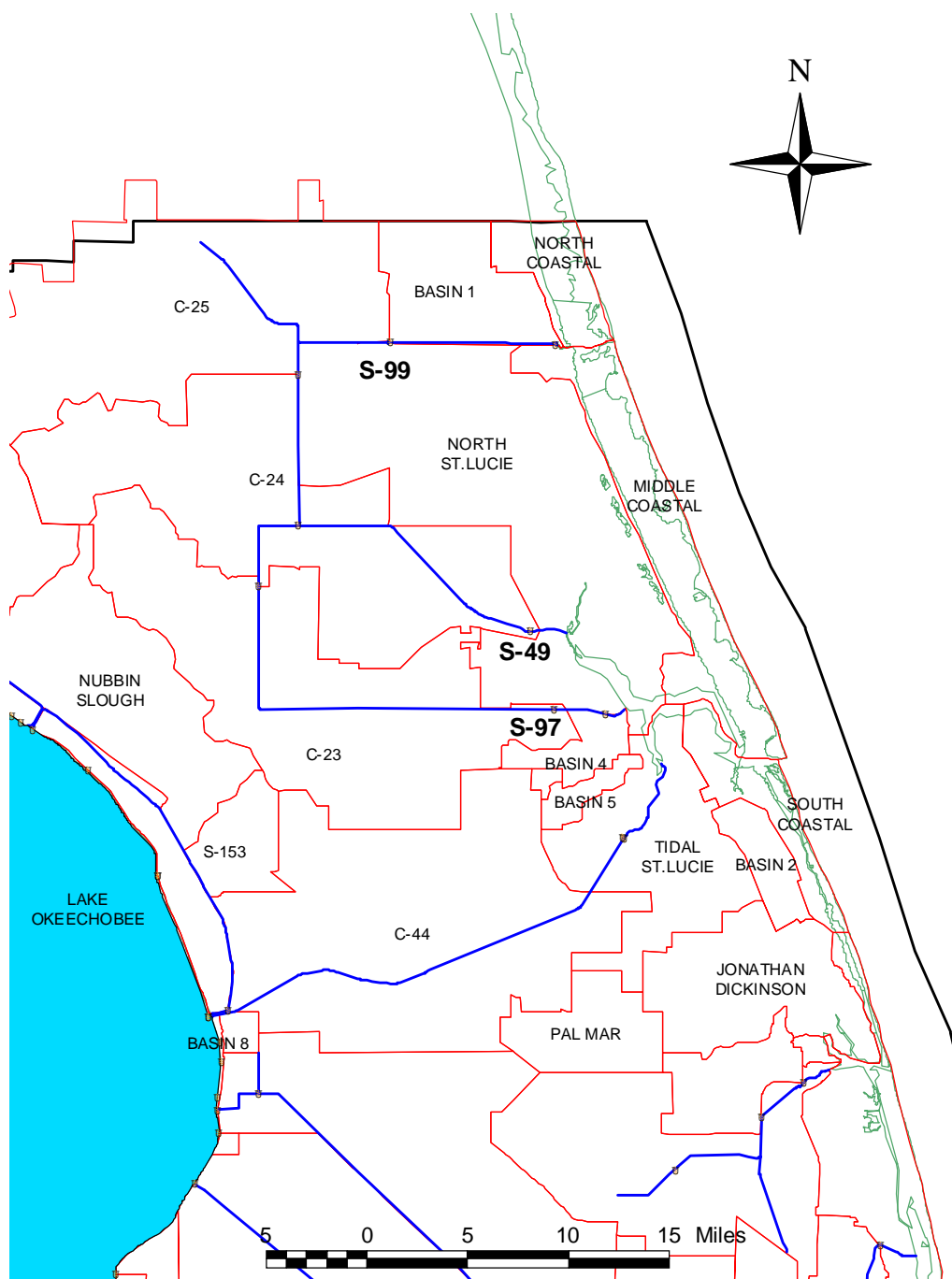


Figure 10. Upper East Coast Water Level Monitoring Locations

### C-23 Canal Average Daily Water Surface Elevation

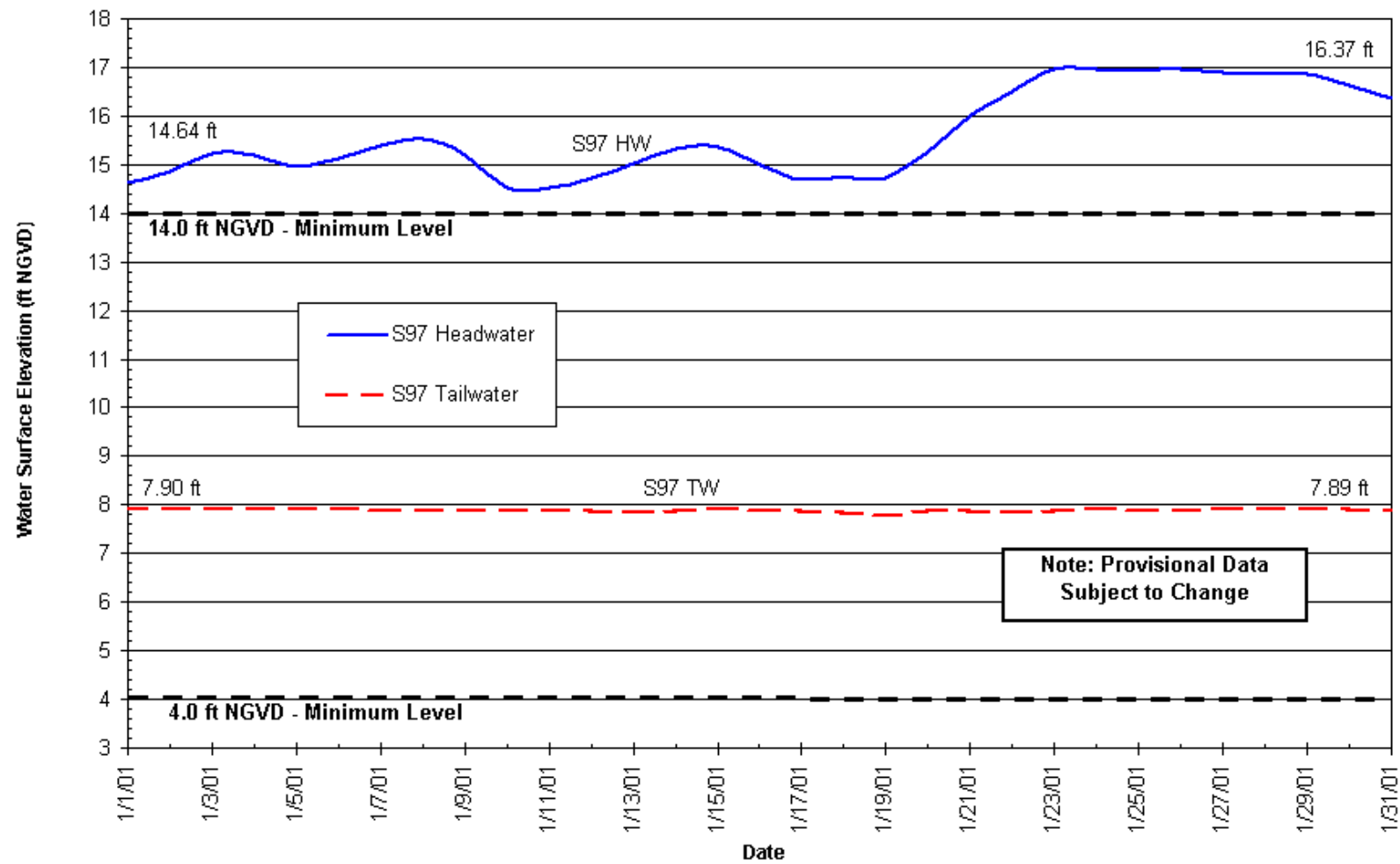


Figure 11.

C-24 Canal Average Daily Water Surface Elevation

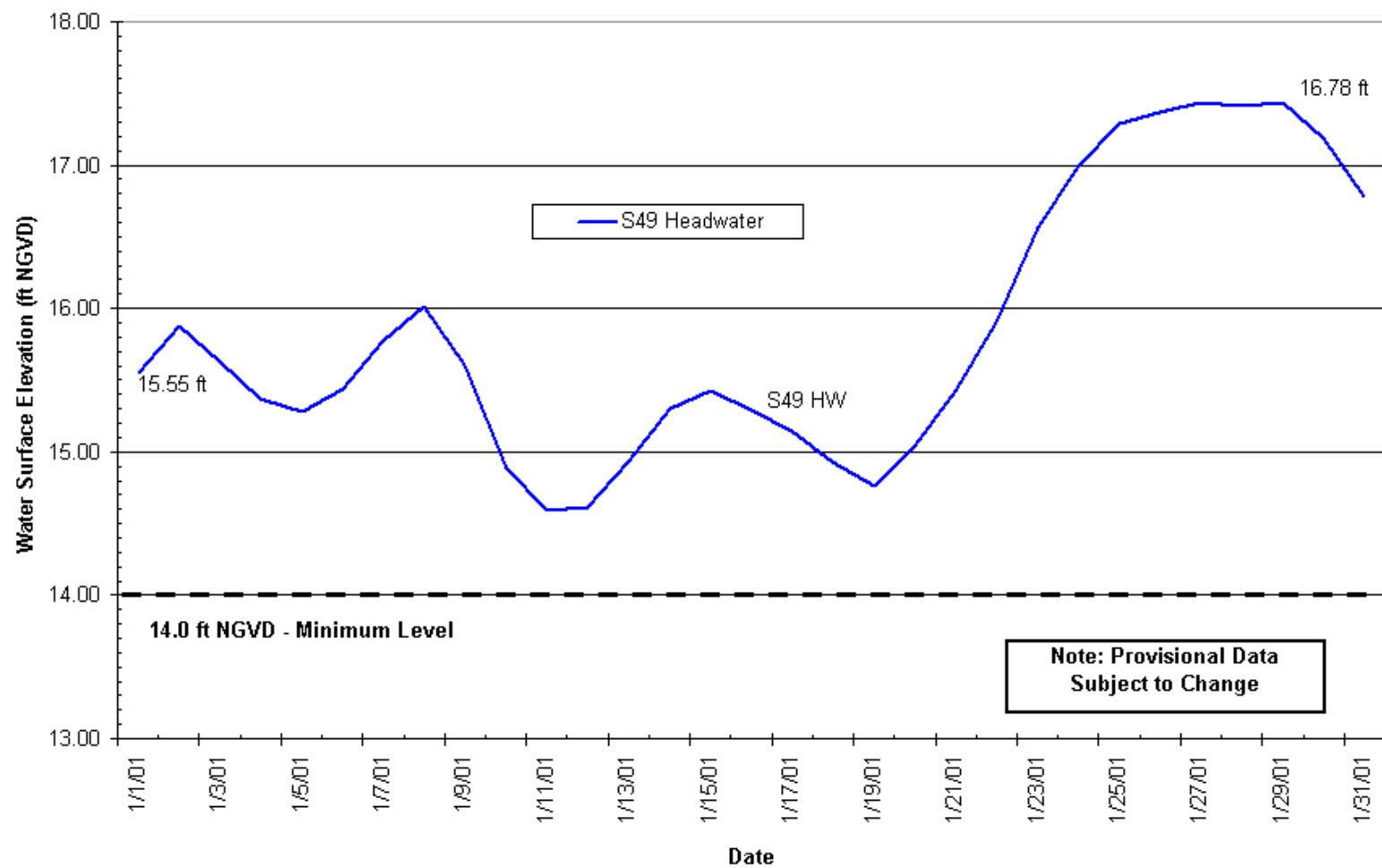


Figure 12.

### C-25 Canal Average Daily Water Surface Elevation

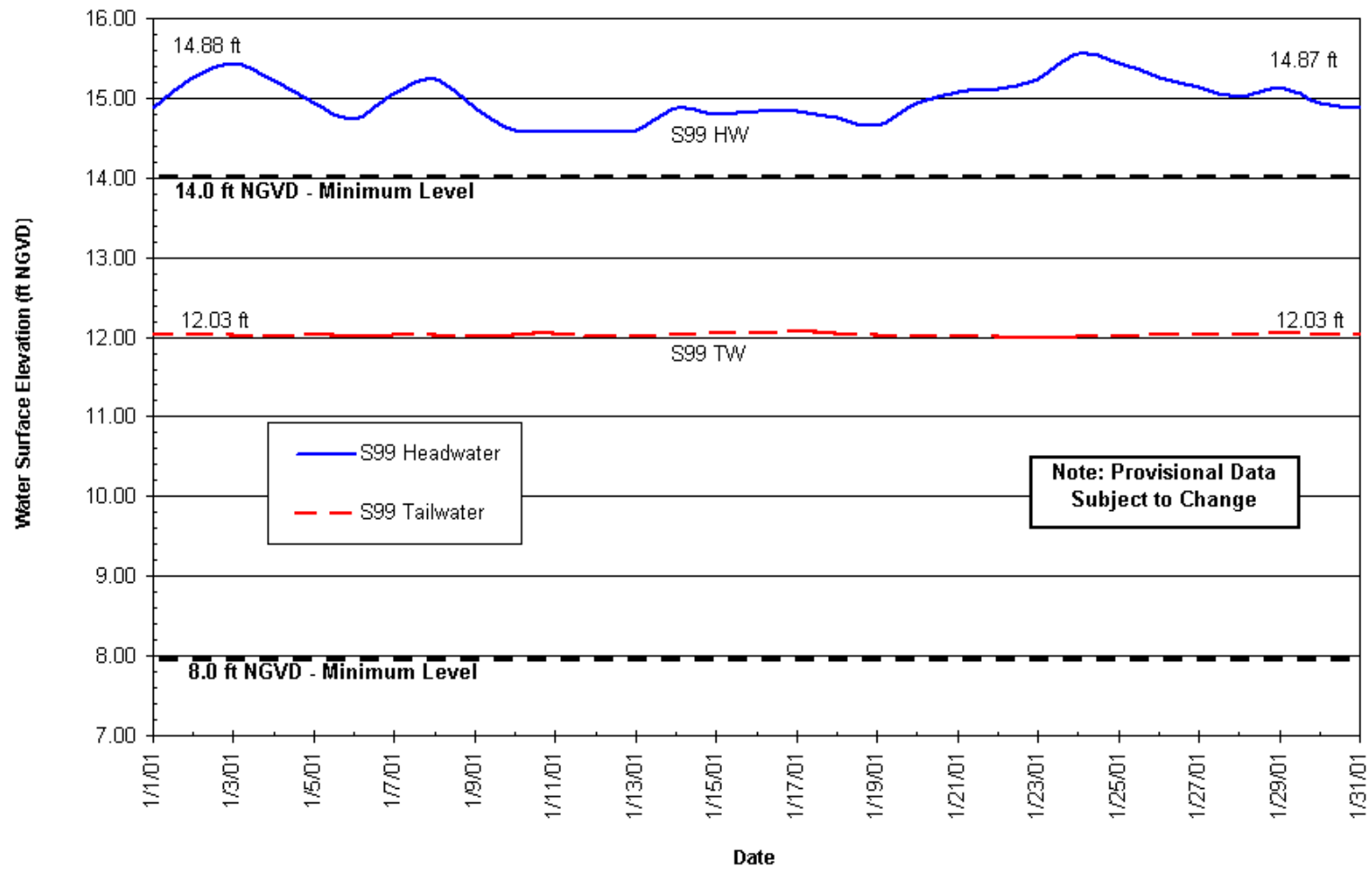


Figure 13.



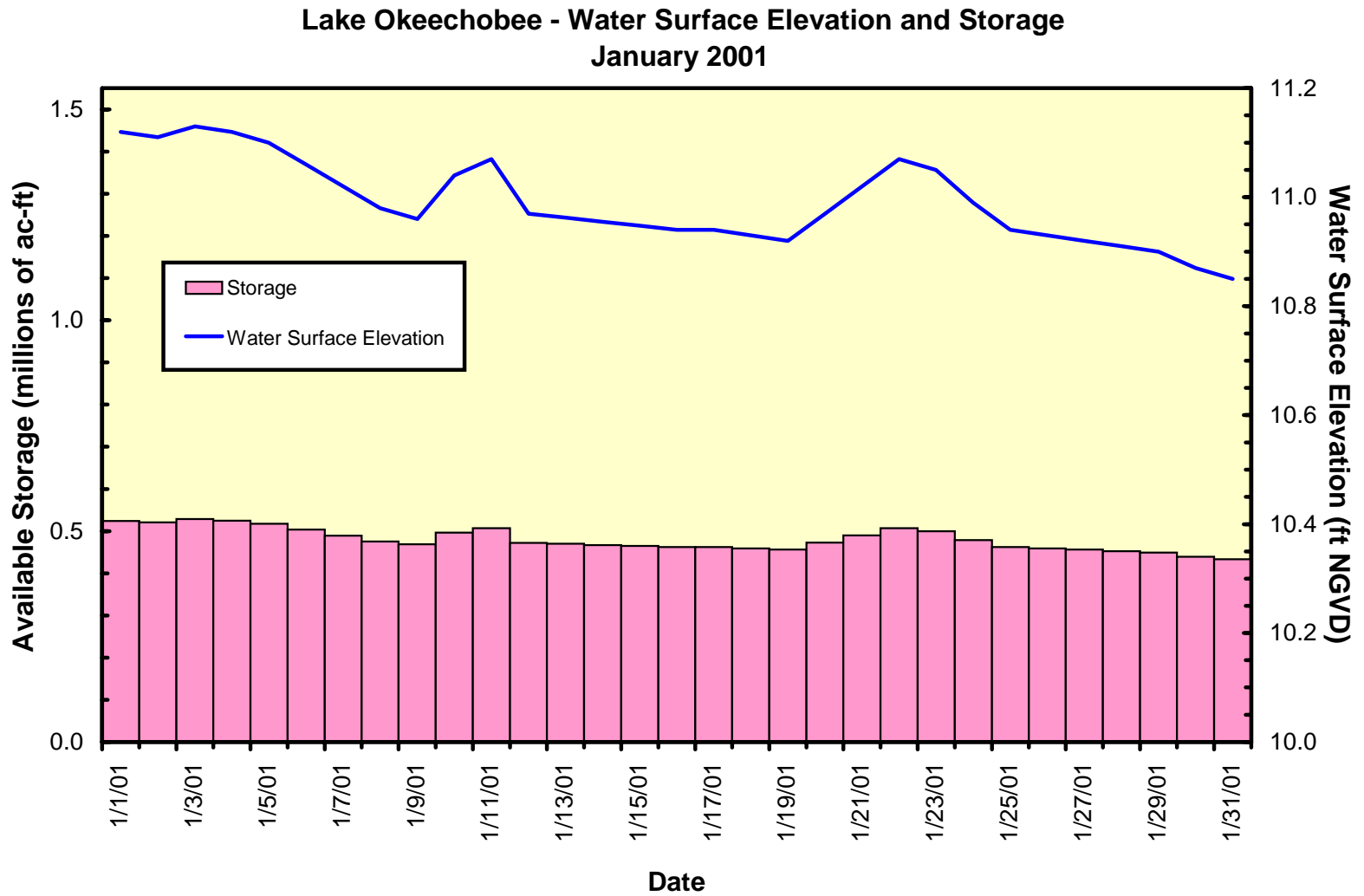


Figure 14.

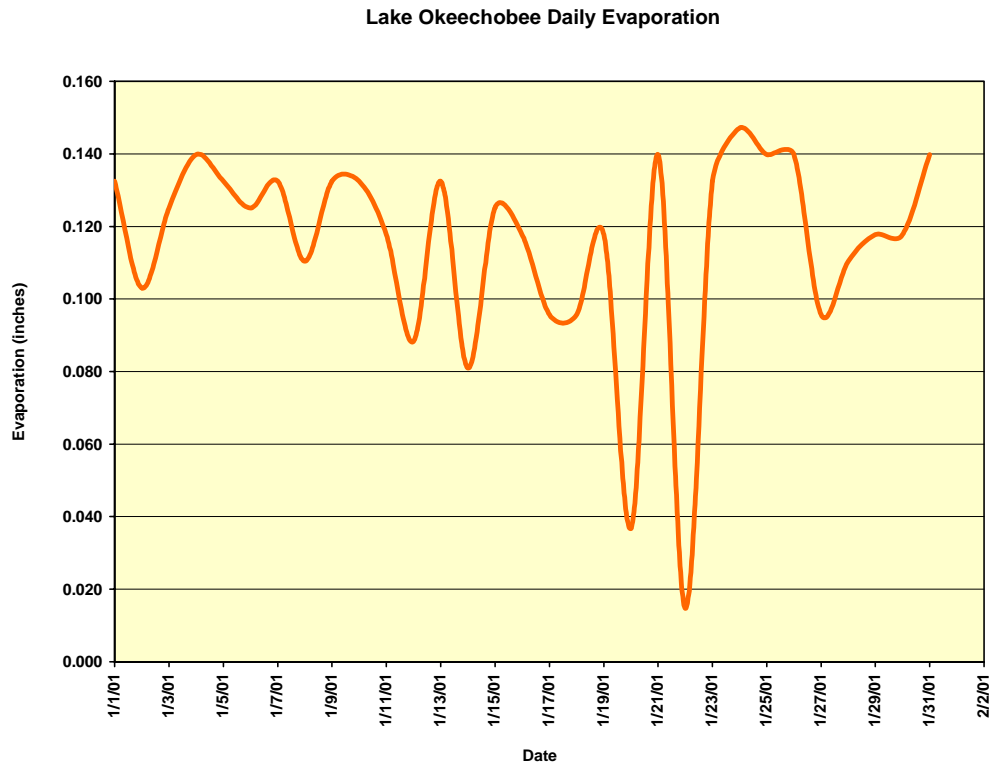


Figure 15.

### Lake Okeechobee Service Allocation Areas

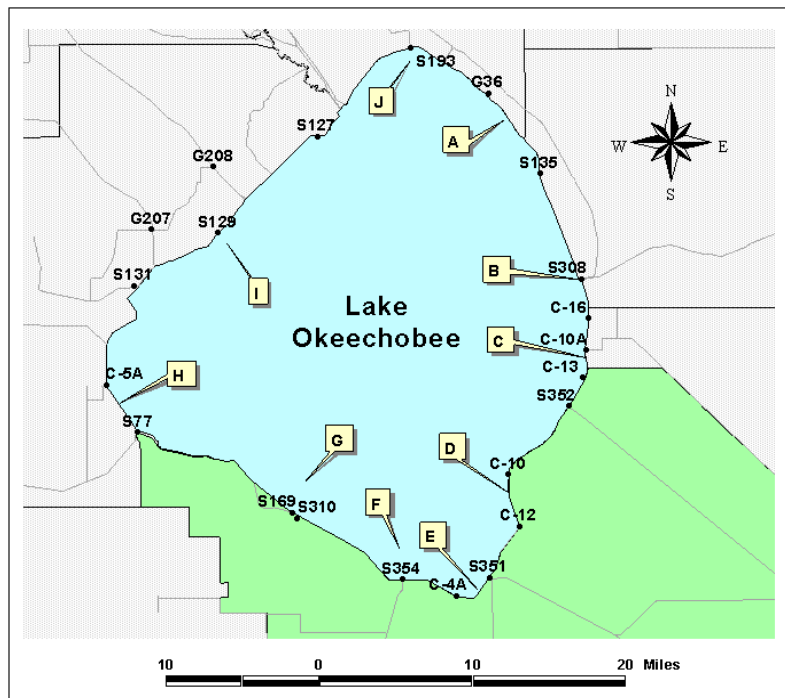


Figure 16.

Table 2.

## Lake Okeechobee Flow for January 2001

Sub-Area On Figure 16	Supply-Side Management Sub-Areas	Controlled by Structure	DBKEY	Inflow Month Total (ac-ft)	Outflow Month Total (ac-ft)
<b>A</b>	<b>NORTHEAST LAKE SHORE</b>	S-135 pump	15801	0	0
		S-135 gate	15800	0	0
		S-135 lock		0	1,107
		G-36 lock (USGS data)		169	405
		<b>SUBTOTAL</b>		169	1,512
<b>B</b>	<b>ST. LUCIE (C-44)</b>	S-308 4-gates (COE data)	DJ239	0	6,232
		S308 (0700 - 2100)(COE data)		0	4,971
		S-308 lock (COE data)		0	18
		<b>SUBTOTAL</b>		0	6,250
<b>C</b>	<b>WPB CANAL &amp; L-8</b>	S-352 2-gates	FF581	0	3,734
		C-10A (USGS data)	02855	567	568
		C-13		0	0
		C-16		0	0
		<b>SUBTOTAL</b>		567	4,302
<b>D</b>	<b>E.BEACH &amp; E.SHORE WCD</b>	C-10 (pump- private)	15645	0	330
		C-12 (pump-private)	15646	0	332
		<b>SUBTOTAL</b>		0	662
<b>E</b>	<b>N.NEW RIVER &amp; HILLSBORO</b>	S-351 3-gates	HA461	0	5,568
		C-4A (pump-private)		0	215
		<b>SUBTOTAL</b>		0	5,783
<b>F</b>	<b>MIAMI CANAL BASIN</b>	S-354 2-gates	H6940	0	4,120
		<b>SUBTOTAL</b>		0	4,120
<b>G</b>	<b>C-21 &amp; S-236 BASINS</b>	S-310 lock (COE data)		252	1,479
		S-169 3-gates	15590	686	451
		<b>SUBTOTAL</b>		252	1,479
<b>H</b>	<b>CALOOSAHATCHEE (C-43)</b>	S-77 4-gates (COE data)	DJ235	7,716	2,533
		S77 (0700 - 2100) (COE data)		6,548	3,282
		S-77 lock (COE data)		0	4
		C-5A 1-gate		0	2,659
		<b>SUBTOTAL</b>		7,716	5,195
<b>I</b>	<b>NORTHWEST LAKE SHORE</b>	G-207 pump (135cfs)	G5165	0	521
		G-208 pump (135cfs)	G5166	0	601
		S-127 pump	15820	0	0
		S-127 gate	15819	3	0
		S-127 lock		0	0
		S-129 pump	15824	0	0
		S-129 gate	15823	0	0
		S-131 pump	15718	0	0
		S-131 gate	04042	0	0
		S-131 lock		0	0
		<b>SUBTOTAL</b>		3	1,122
<b>J</b>	<b>NORTH LAKE SHORE</b>	S-193 lock		608	715
		<b>SUBTOTAL</b>		608	715
	<b>OTHER INFLOW STRUCTURES</b>	S-4 pump	15733	0	0
		S-71 gates	15866	0	0
		S-72 gate	15770	0	0
		S-84 gate	15788	0	0
		S65E	KO585	0	0
		S-154 culvert	15919	0	0
		S133 pump	15829	0	0
		S-191 gate	15804	0	0
		FISHP_O (USGS)	00090	0	0
		S-236 pump	pref	0	0
		C-12A	pref	0	0
		<b>SUBTOTAL</b>		0	0
		<b>TOTALS</b>		9,314	31,140

NOTE: Provisional Data Subject to Change.

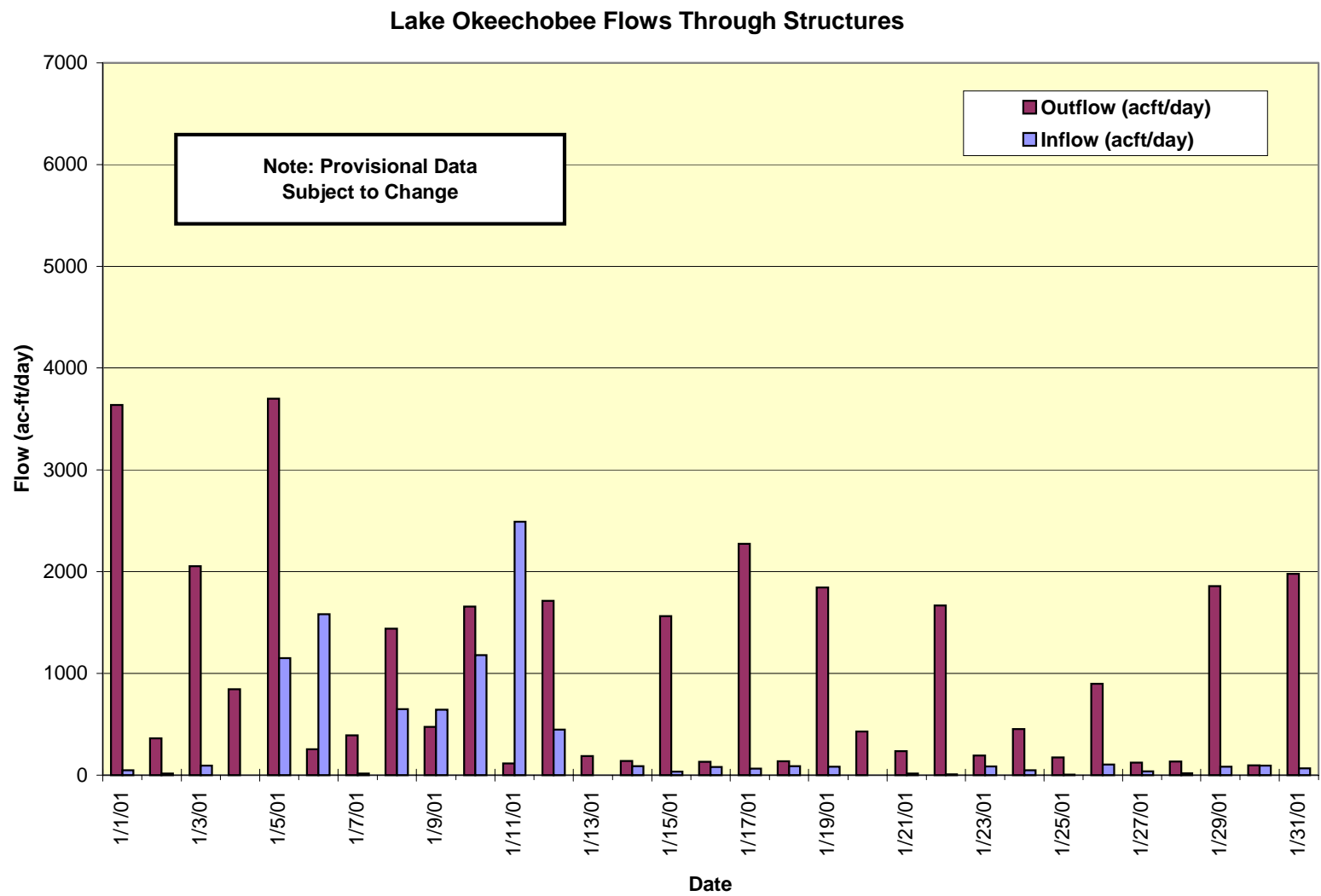


Figure 17.

## **Water Conservation Areas**

The average water level in Water Conservation Area 1 declined from 16.32 ft NGVD to 15.92 ft NGVD in January 2001. Total storage at the end of the month was estimated at 155,760 acre-ft while available storage was 149,360 acre-ft as referenced in the Daily System Storage Report. Outflow from Water Conservation Area 1 through structures G94A, B, C and S39 was 1,624 acre-ft. Outflow from Water Conservation Area 1 through structure S5AS was 1,922 acre-ft. Figure 18 shows the locations of structures in the Water Conservation Areas. Daily flows through S5AS are depicted in Figure 19. Average water level in Water Conservation Area 2 declined from 11.75 to 11.04 in January 2001. Total storage at the end of the month was estimated at 45,640 acre-ft while available storage was 17,640 acre-ft. Outflow from Water Conservation Area 2 through structure S38 was 6,146 acre-ft. There was no flow through S34. The average water level in Water Conservation Area 3 declined from 9.70 to 9.38 in January 2001. Total storage at the end of the month was estimated at 510,560 acre-ft; available storage was 482,560 acre-ft. Figures 20, 21 and 22 depict water levels and storage in Water Conservation Areas 1, 2 and 3, respectively.

## **GROUND WATER**

### **Monthly Volume Pumped**

Eight counties currently under water use restrictions report quantity of water pumped for water supply purposes to the District. The average daily amount of water pumped for the month of January is shown in Table 3. All counties, except Okeechobee County, show a decrease in the average daily volume of water pumped for the month in comparison to January 2000 and in comparison to the month prior to when water restrictions were imposed, November 2000. Okeechobee County reported a 5 percent increase in average daily volume of water pumped in comparison to the amount reported for January 2000.

### **Well Water Levels**

A number of wells were selected to represent conditions in the major aquifers used to meet water supply needs. The locations of these wells are shown in Figure 23. Figures 24 through 33 show the water level in these wells and associated statistical levels in the Upper East Coast, Lower East Coast and West Coast regions by aquifer. The figures were obtained from the USGS Miami Subdistrict web site and are based on provisional data.

## **SUMMARY**

Table 4 summarizes water supply related hydrologic data for lakes and Water Conservation Areas for January 2001. This report was generated based on provisional data that were available at the time it was prepared. The report provides a monthly hydrologic synopsis for the District. Questions about the report and/or the data used to generate the report should be directed to Tim Bechtel, Ph.D., at (561) 682-6392.



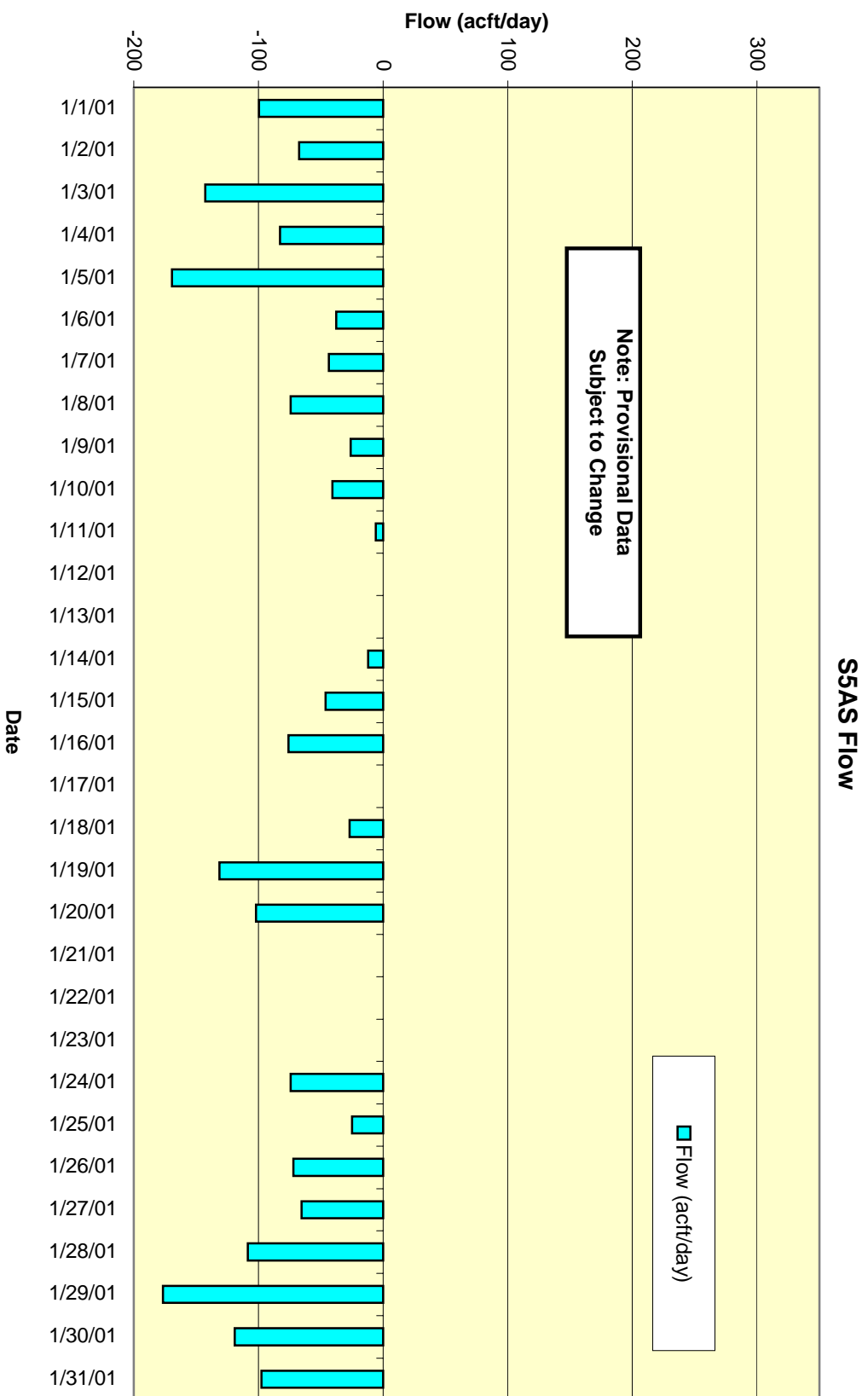


Figure 19.

# WCA1 - Water Surface Elevation and Storage January 2001

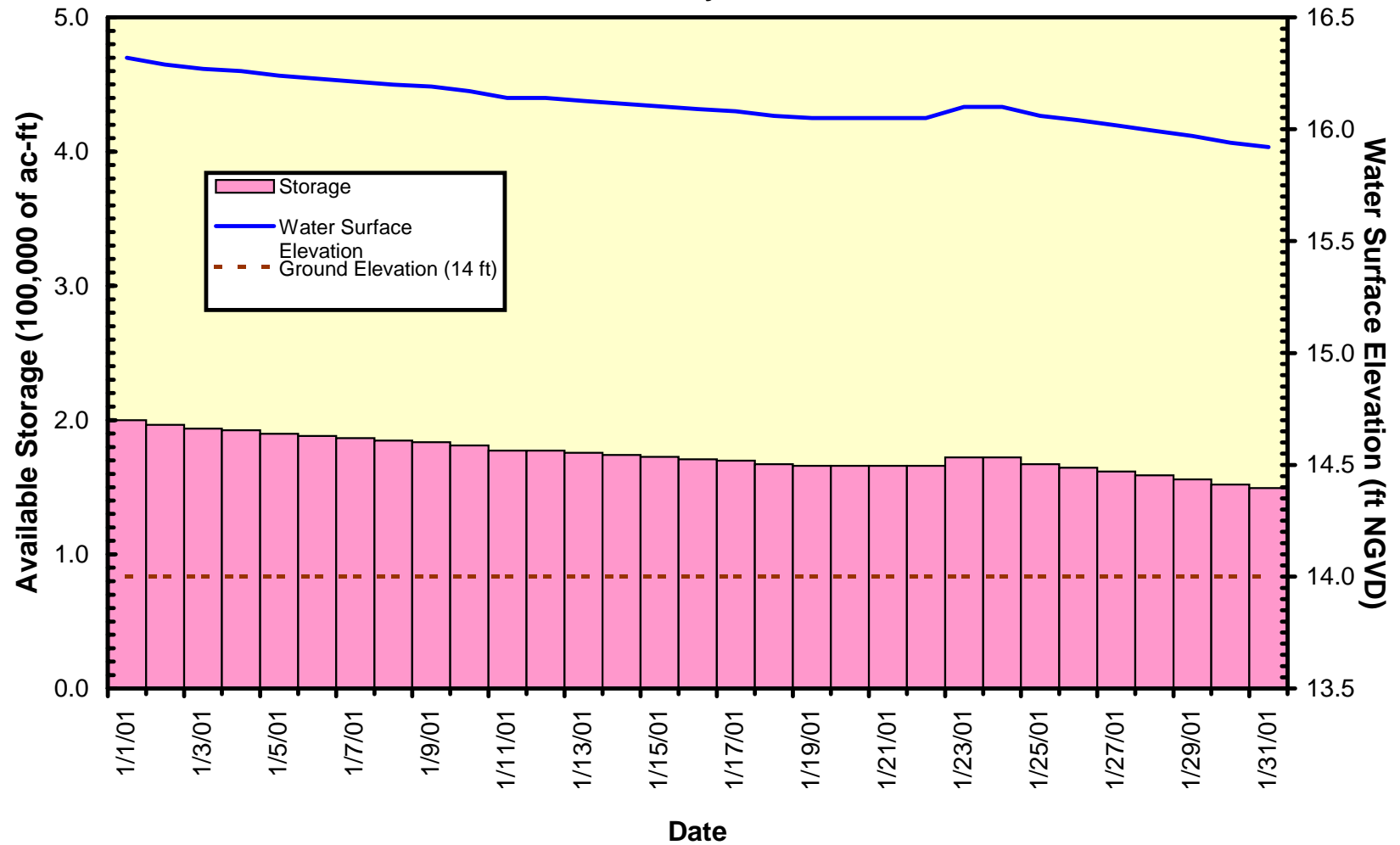


Figure 20.



# WCA2 - Water Surface Elevation and Storage January 2001

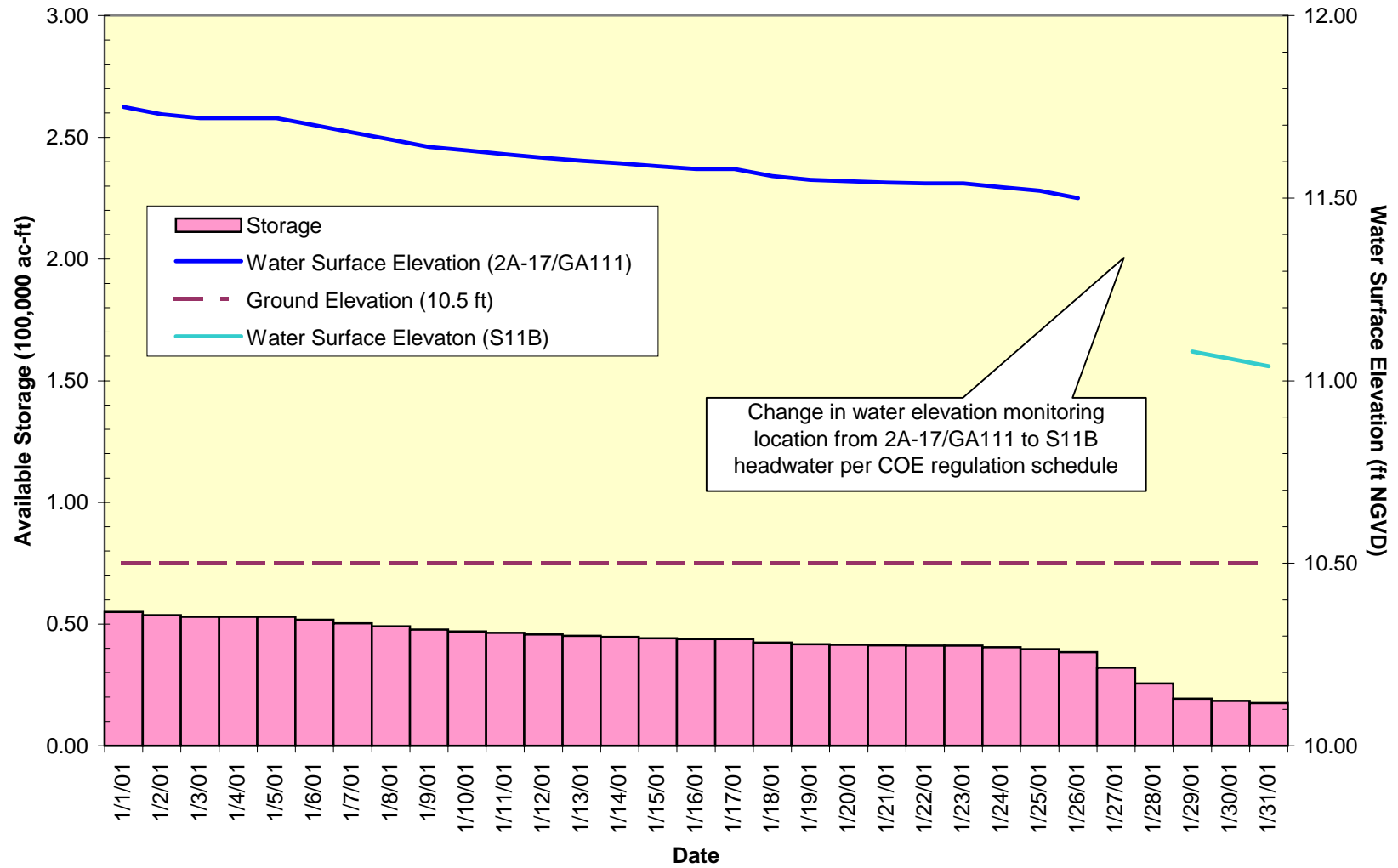


Figure 21.

### WCA3 - Water Surface Elevation and Storage January 2001

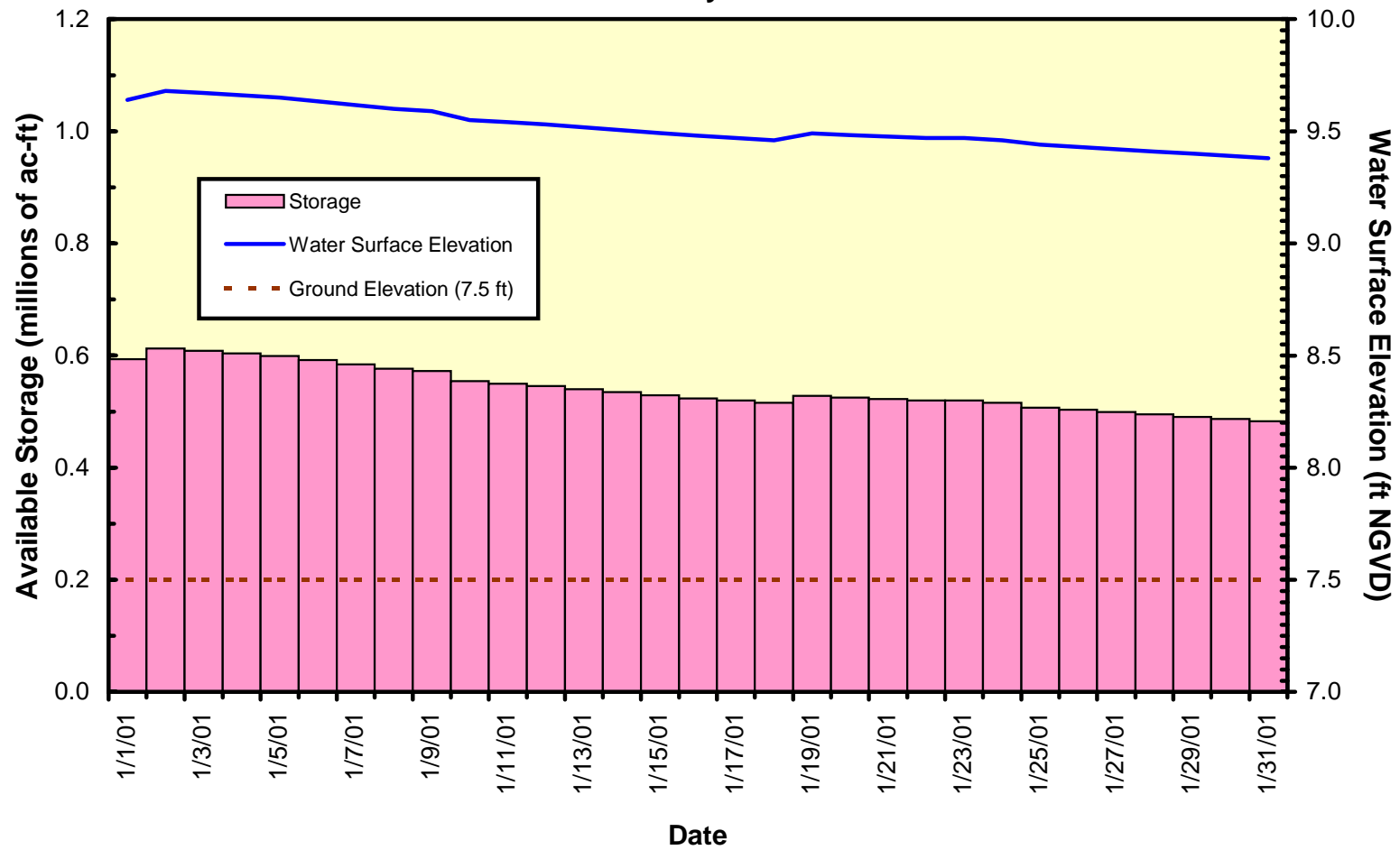


Figure 22.

Table 3.

<b>Average Daily Pumpage</b>					
<b>County</b>	<b>January 2001 Daily Average (MGD)</b>	<b>January 2000 Daily Average (MGD)</b>	<b>November 2000 Daily Average (MGD)</b>	<b>January 2001 to January 2000</b>	<b>January 2001 to November 2000</b>
<b>Broward</b>	130.0	144.6	148.2	90%	88%
<b>Collier</b>	51.5	55.2	56.0	93%	92%
<b>Hendry</b>	3.3	4.2	3.6	80%	93%
<b>Lee</b>	59.0	61.2	72.9	96%	81%
<b>Monroe</b>	16.3	17.5	16.7	93%	98%
<b>Miami-Dade</b>	343.4	371.9	377.6	92%	91%
<b>Okeechobee</b>	2.3	2.2	2.4	105%	97%
<b>Palm Beach</b>	199.8	206.1	221.5	97%	90%
<b>Grand Total</b>	805.7	862.9	898.9	93%	90%

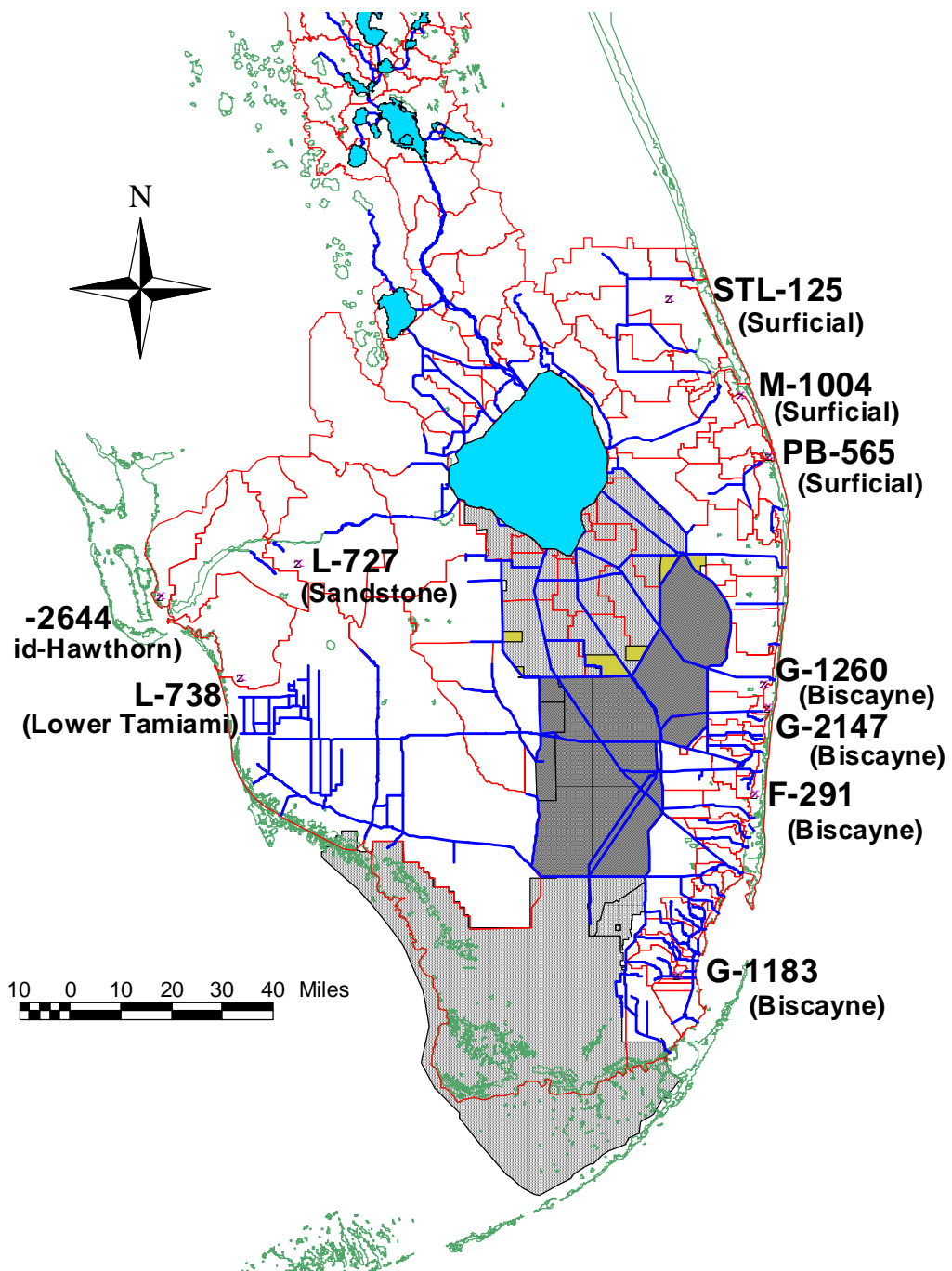


Figure 23. Groundwater Monitoring Locations

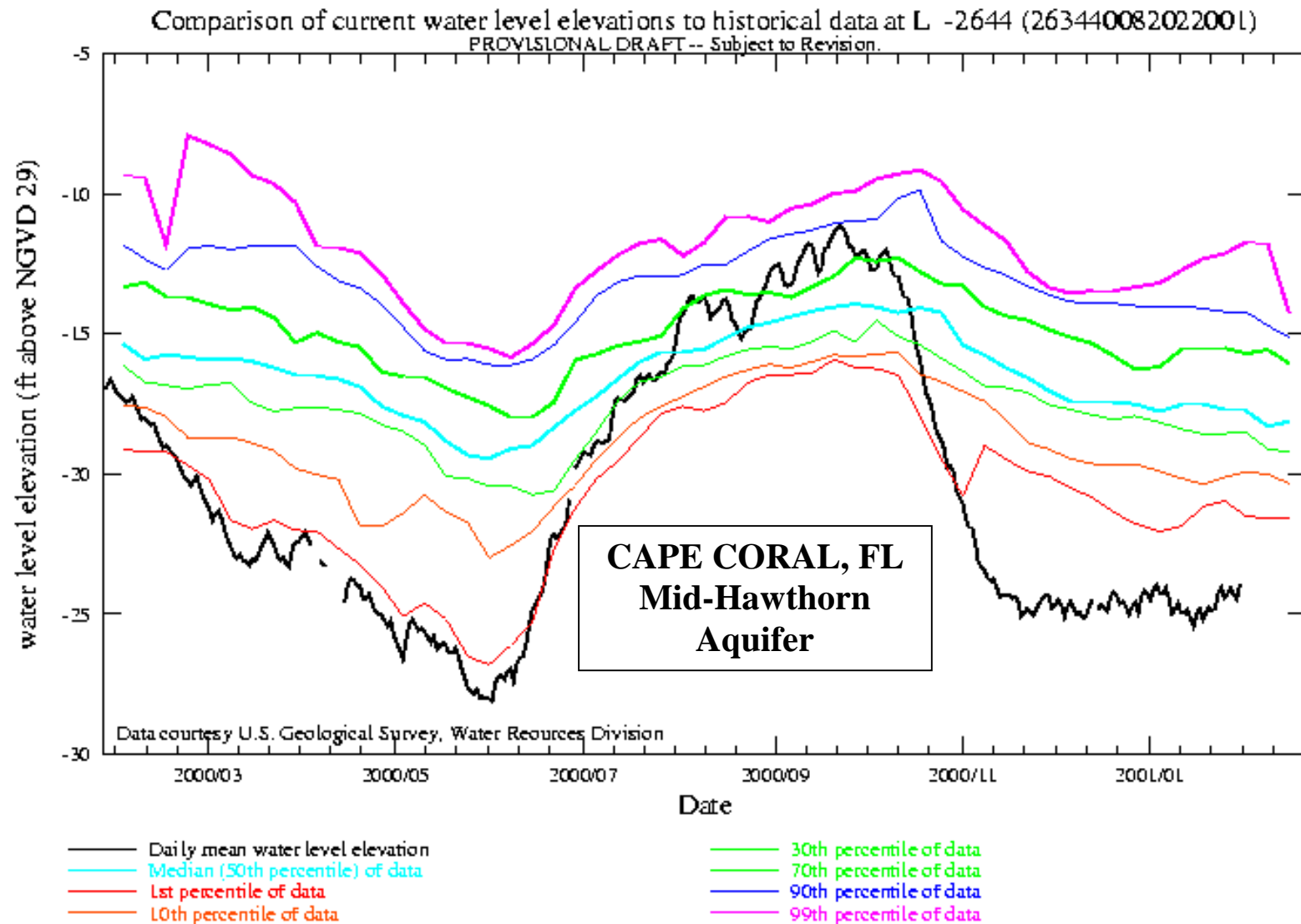


Figure 24.

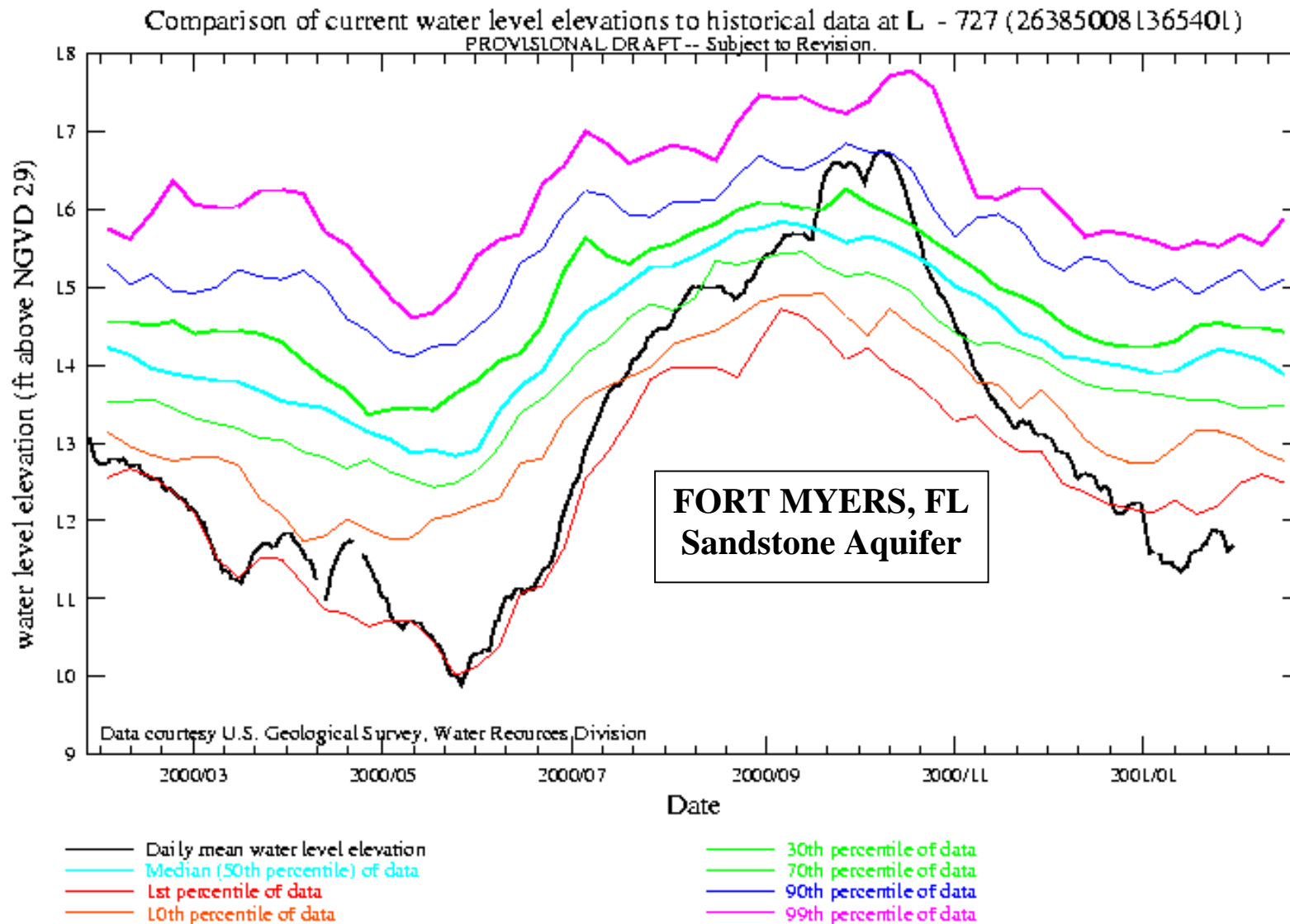


Figure 25.

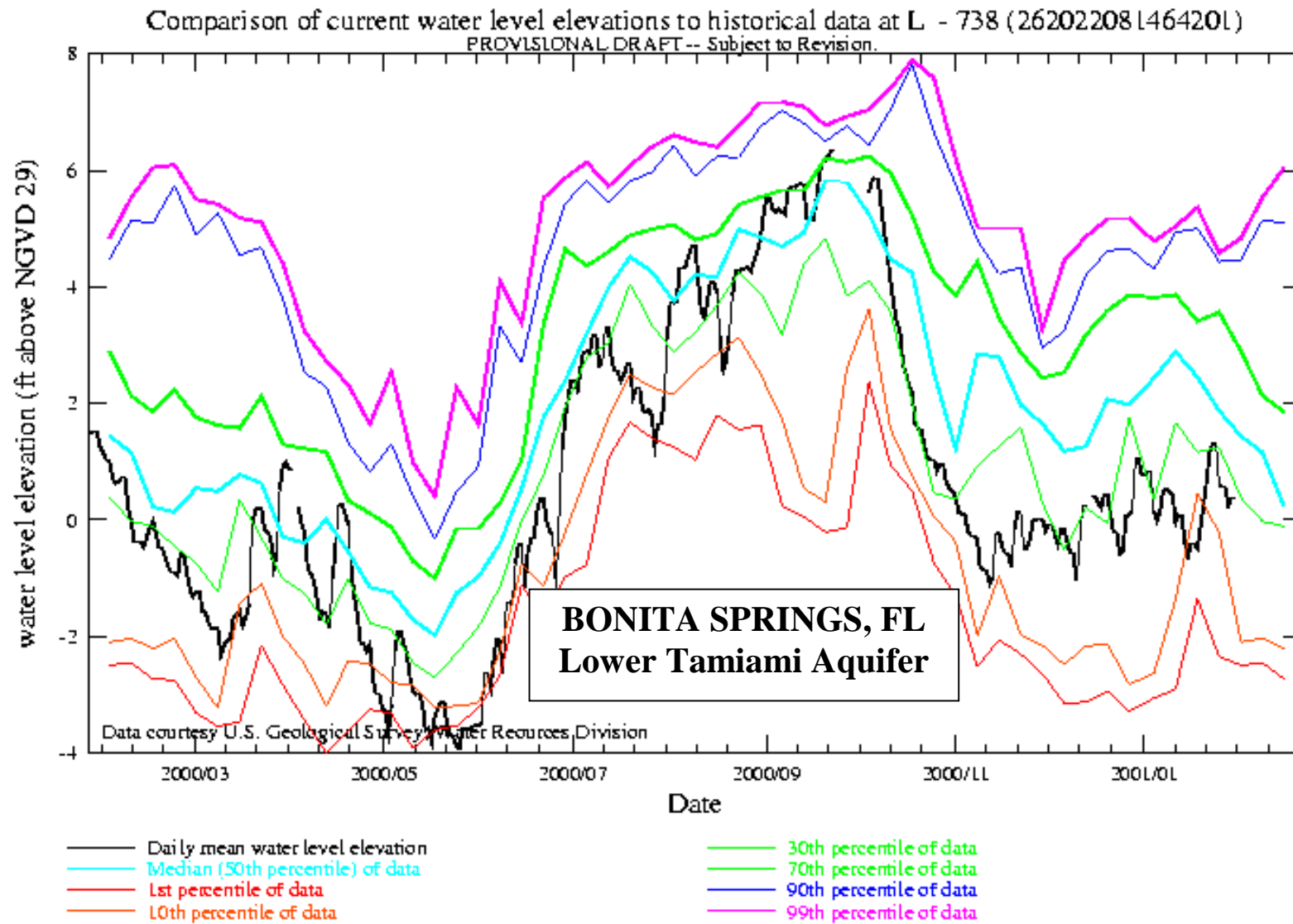


Figure 26.

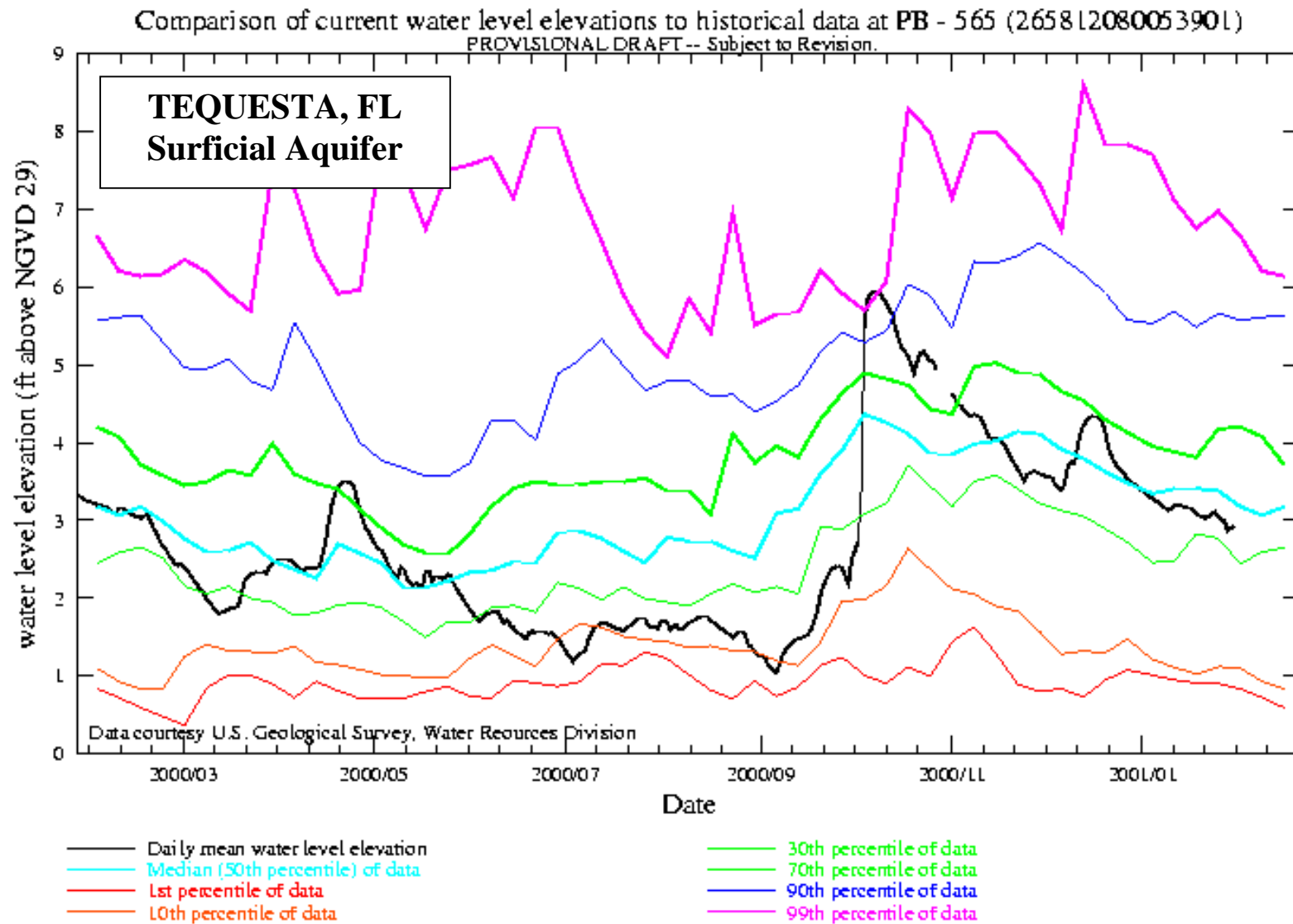


Figure 27.



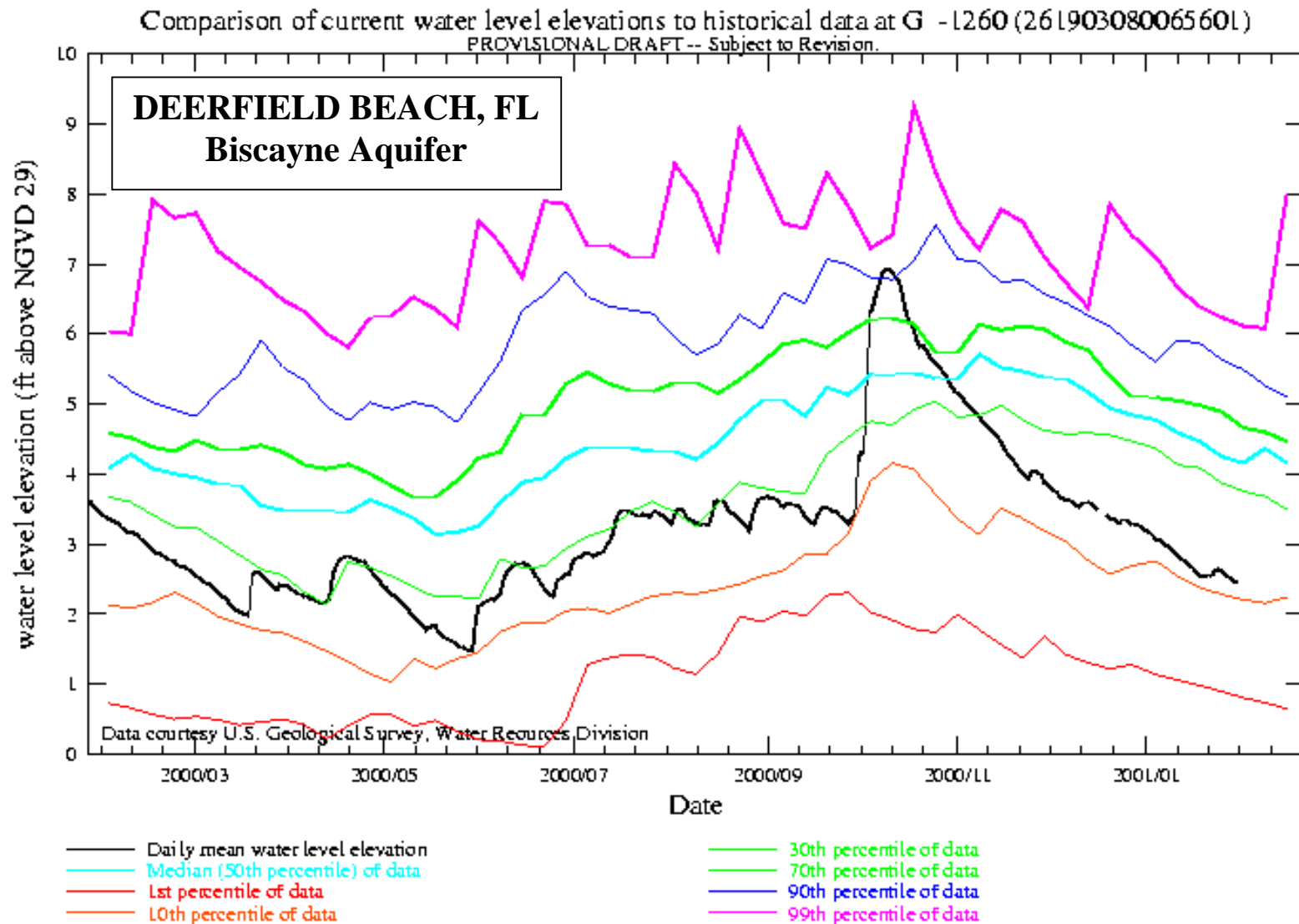


Figure 28.

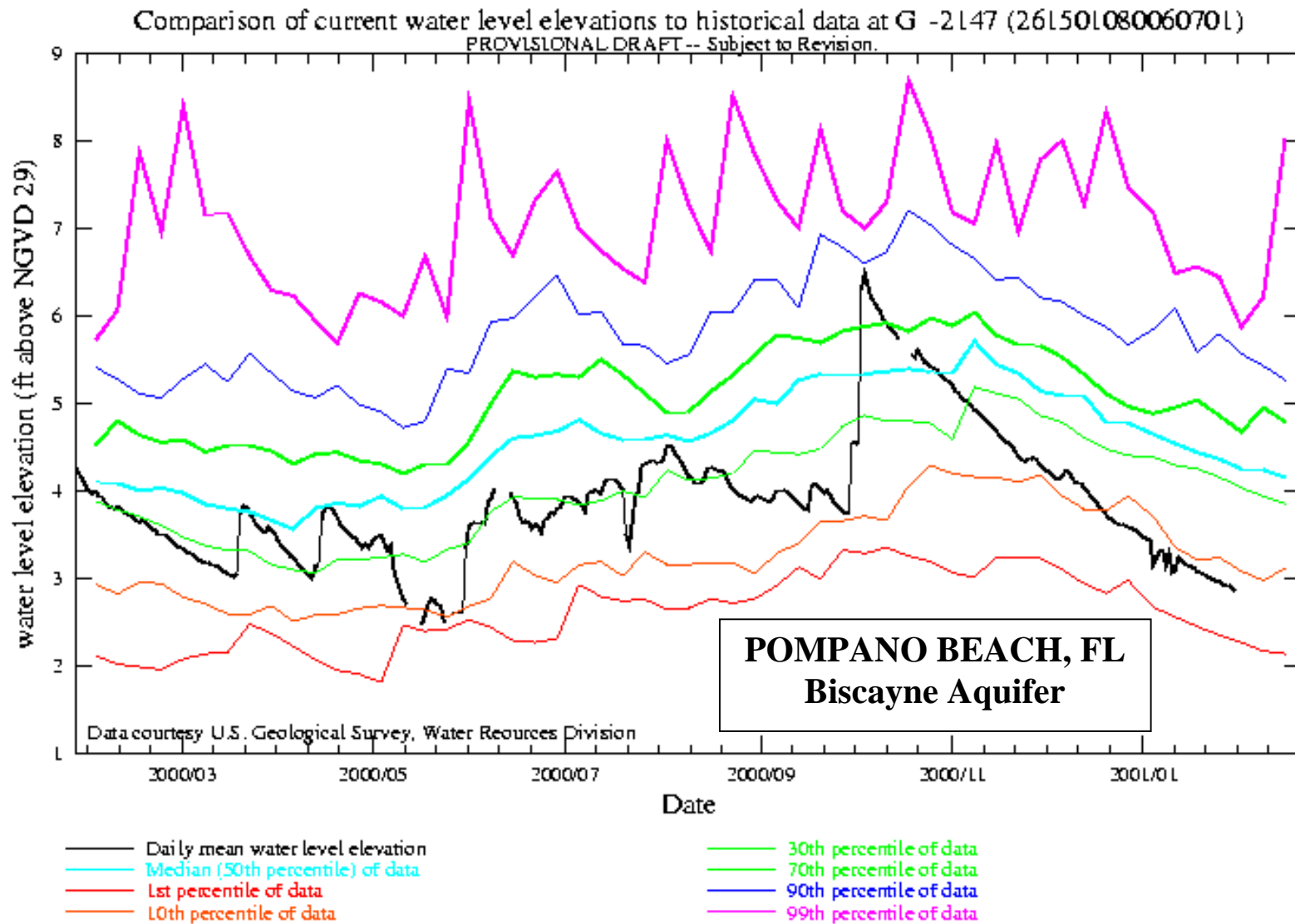


Figure 29.

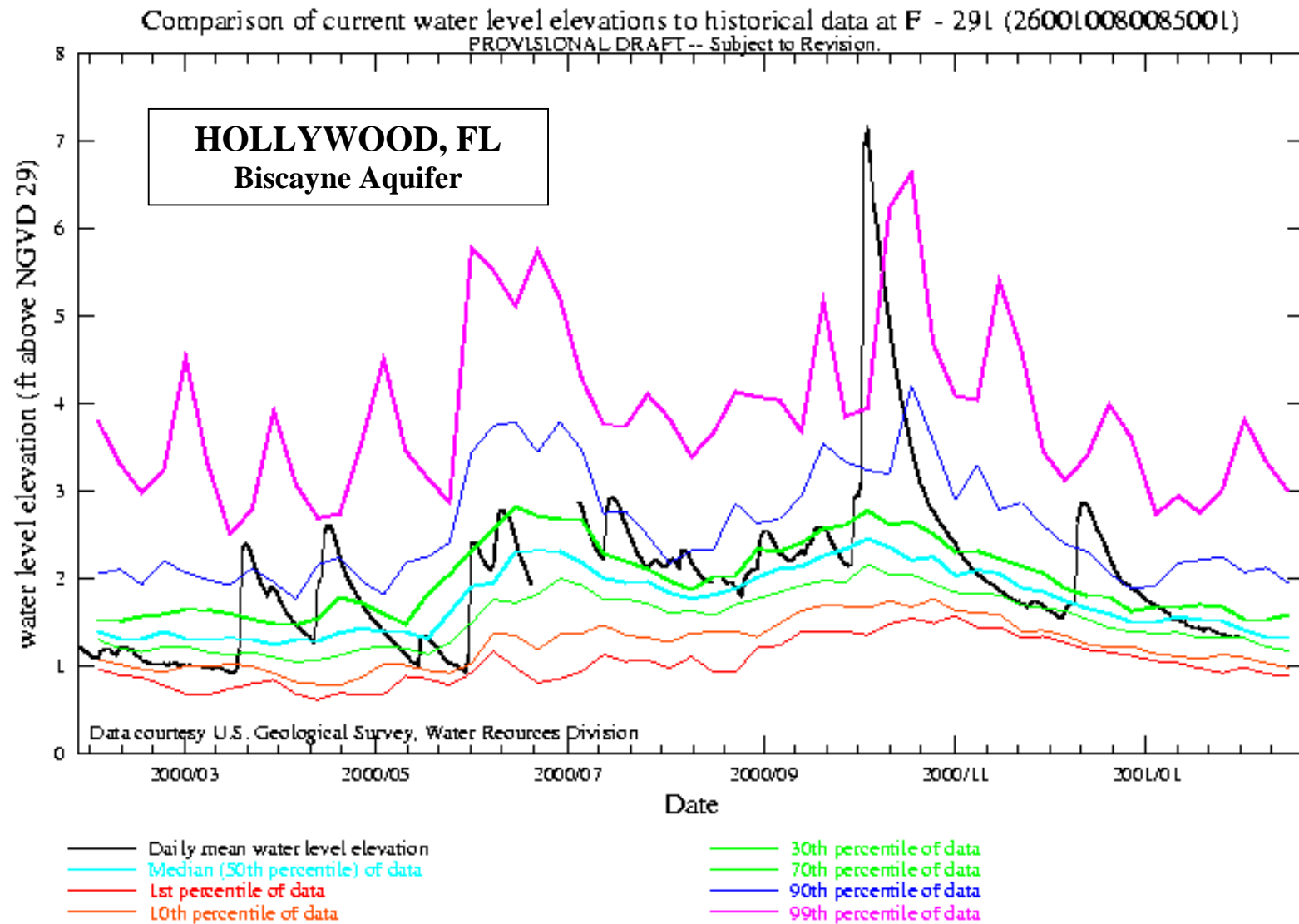


Figure 30.

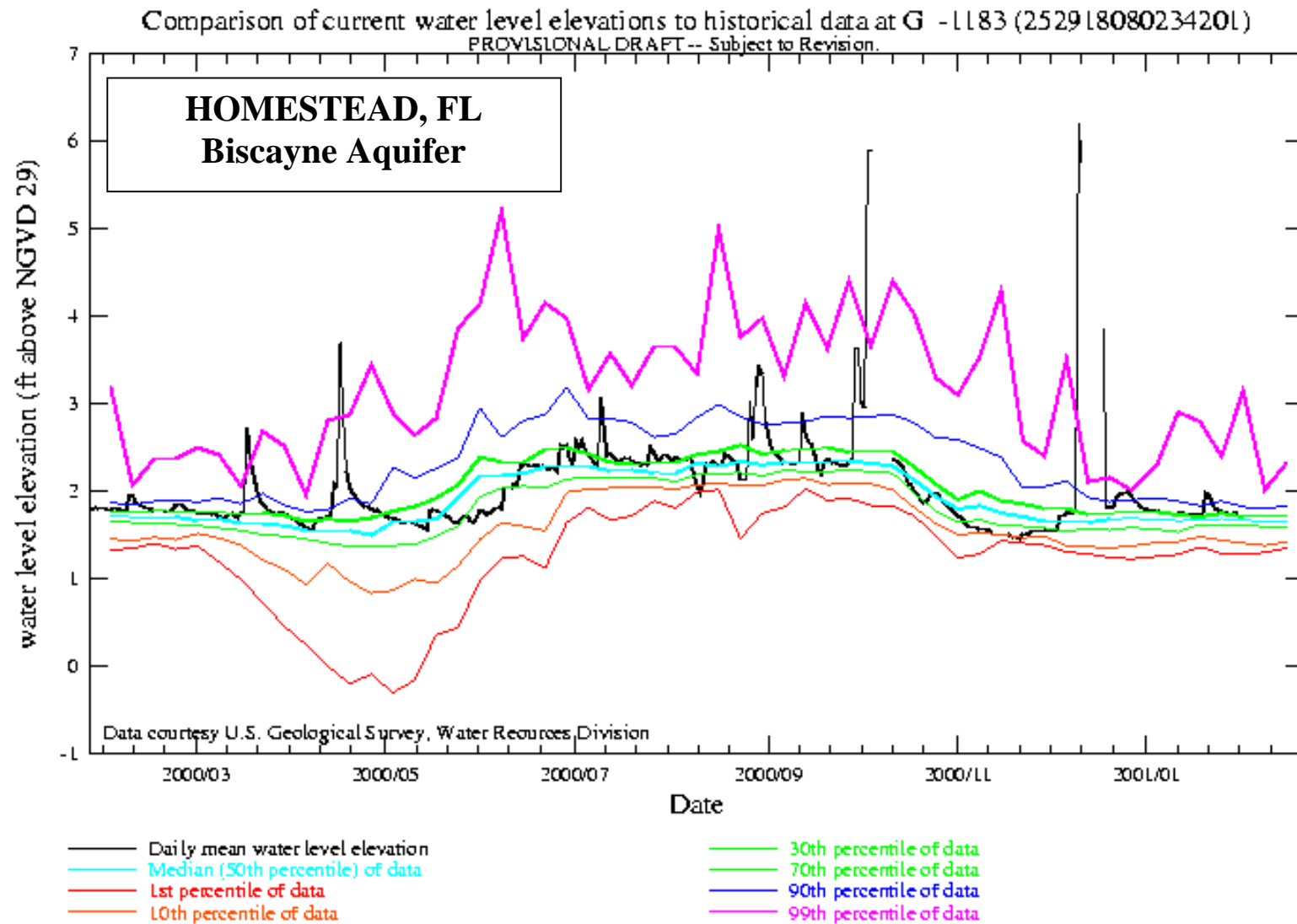


Figure 31.

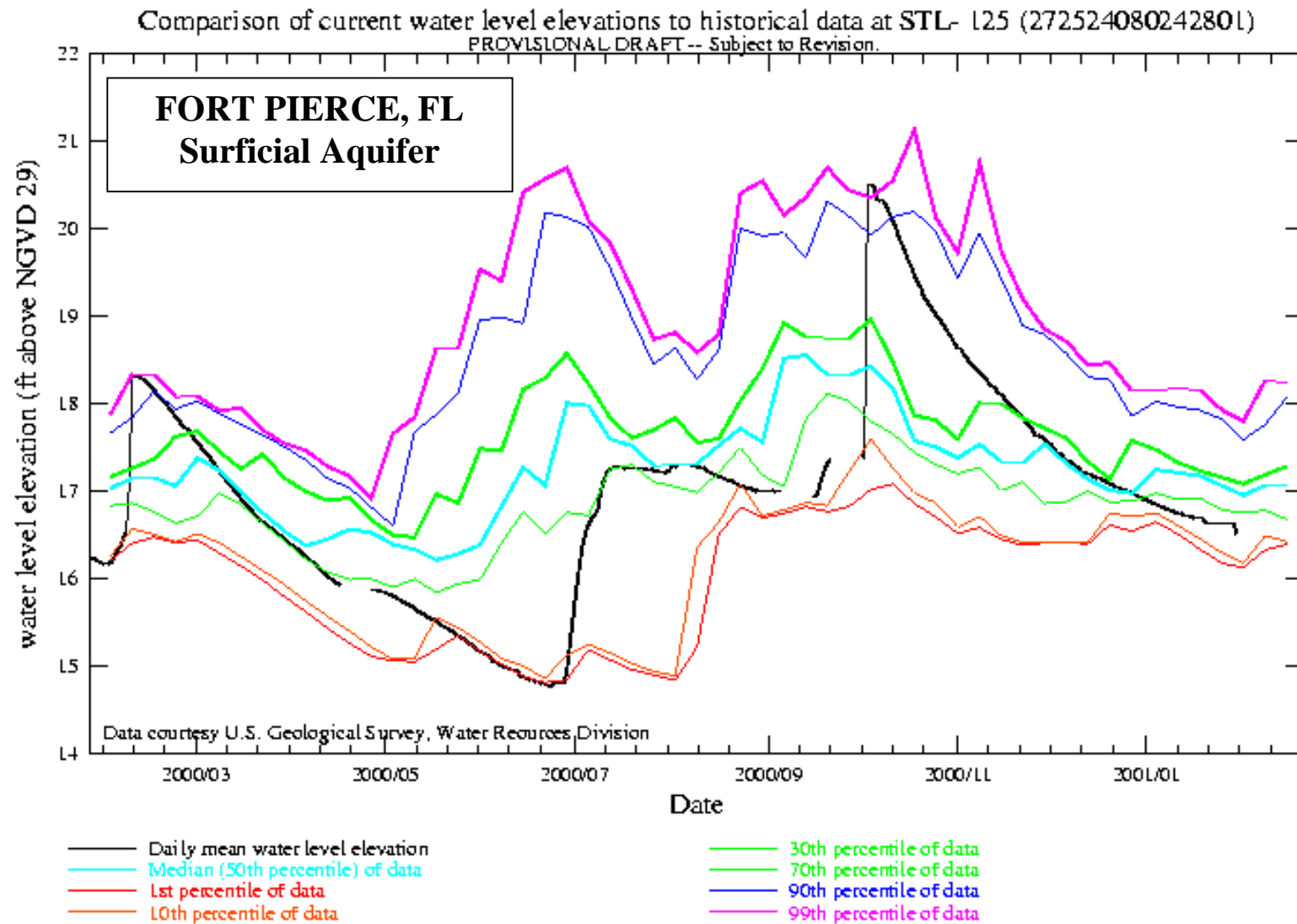


Figure 32.

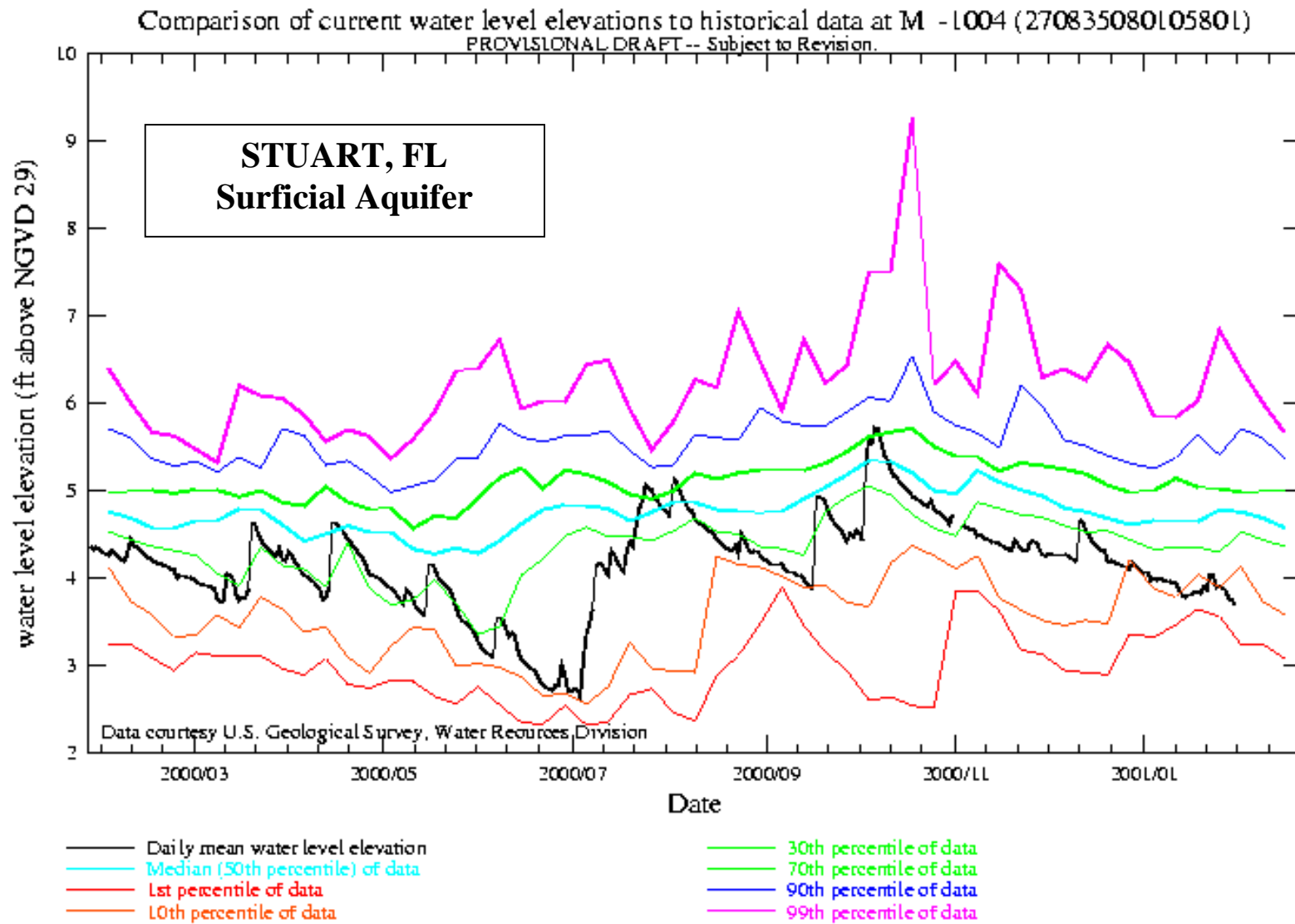


Figure 33.

Table 4. Monthly Water Supply Summary for Lakes and Water Conservation Areas (January, 2001)

<b>Lake/Area</b>	<b>Monthly Inflow ac-ft</b>	<b>Monthly Outflow ac-ft</b>	<b>Monthly Evaporation inches</b>	<b>Beginning stage ft NGVD</b>	<b>Ending stage ft NGVD</b>	<b>End of Month Total storage ac-ft</b>	<b>End of Month Available storage ac-ft</b>
<b>Lake Kissimmee</b>	----	<b>0.00</b>	----	<b>49.16</b>	<b>48.86</b>	<b>217,520</b>	-----
<b>Lake Okeechobee</b>	<b>9,314</b>	<b>31,140</b>	<b>3.6</b>	<b>11.12</b>	<b>10.85</b>	<b>2,316,950</b>	<b>432,950</b>
<b>Lake Istokpoga</b>	----	----	----	<b>37.72</b>	<b>37.58</b>	<b>132,524</b>	----
<b>WCA1</b>	----	<b>1,922</b>	----	<b>16.32</b>	<b>15.92</b>	<b>155,760</b>	<b>149,360</b>
<b>WCA 2</b>	----	<b>6,146</b>	----	<b>11.75</b>	<b>11.04</b>	<b>45,640</b>	<b>17,640</b>
<b>WCA3</b>	----	----	----	<b>9.70</b>	<b>9.38</b>	<b>510,560</b>	<b>482,560</b>